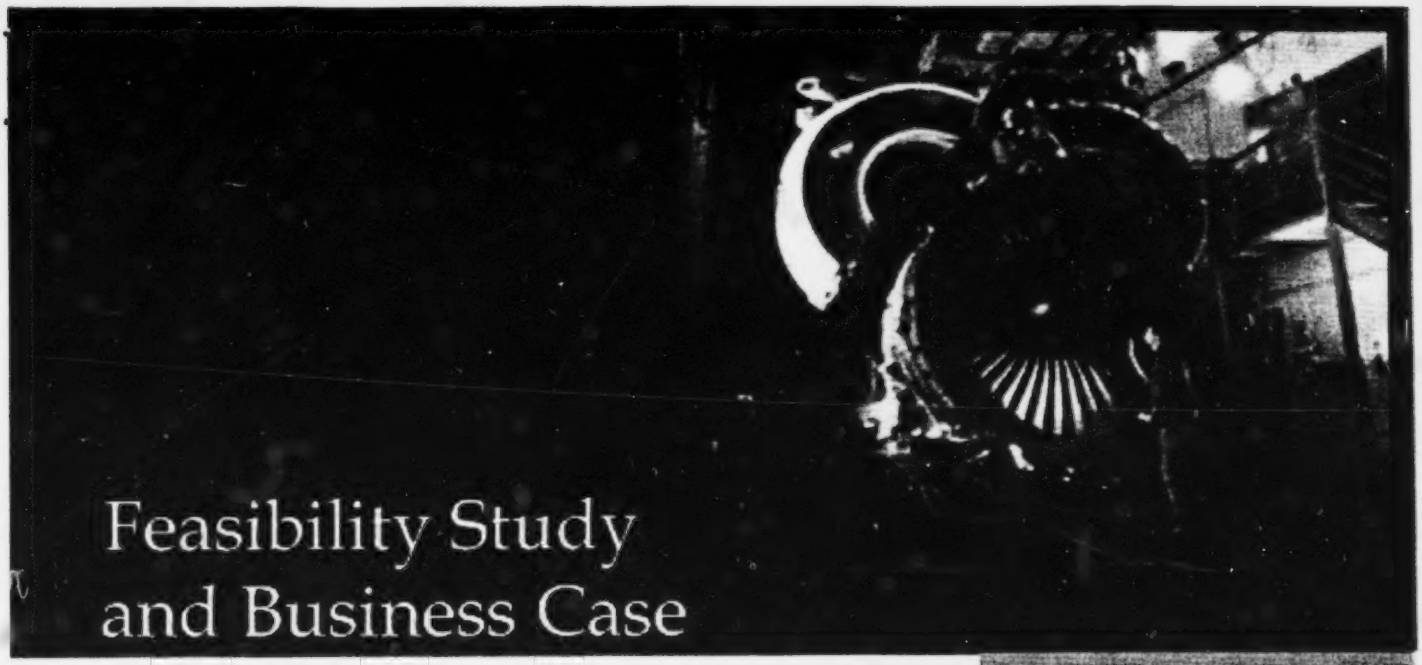

Feasibility Study and Business Case

Aircraft Maintenance Engineer Training in Saskatchewan

Developing an AME Training Facility in the Province of Saskatchewan

M&A

Feasibility Study for Aircraft Maintenance Engineer Training in Saskatchewan

Prepared for:

Saskatchewan Aviation Council
Saskatchewan Post-Secondary Education and Skills Training
Western Economic Diversification Canada

Final Report

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103-05585/

Acknowledgements

McNeal & Associates Consultants Ltd. would like to acknowledge the work of the Steering Committee members for their comments and suggestions during the drafting of this report. Participation in the Stakeholders' Workshop was particularly valuable to the consultants for the insight and guidance provided.

The consultants also wish to thank both the aviation industry and Bombardier Aerospace technicians for responding to the survey questionnaires.

The views and conclusions reached in the report; however, are the consultants and do not necessarily represent those of the Steering Committee.

Executive Summary

The Saskatchewan Aviation Council formed an industry, institution, and government Steering Committee to examine the possibility of establishing an Aircraft Maintenance Engineer (AME) training program in the Province of Saskatchewan. Currently, there is no aviation training school in Saskatchewan and students have to leave the province to obtain training.

McNeal & Associates Consultants Ltd. were retained to determine the feasibility of establishing an AME training program and if feasible, develop a business case.

The consultants conducted a survey of the Saskatchewan aviation industry using personal and telephone interviews, as well as questionnaires to determine the current and future demand for AME training. The various methods of training delivery were addressed, as well as the capital and operating costs for a proposed aviation training school.

The feasibility study developed the following conclusions and recommendations:

There is a demand from potential students as almost all the training colleges across Canada have waiting lists. Currently Saskatchewan sends 17 –22 students out of province for apprenticeship training. There is also a strong industry demand for graduates. The survey results indicated that 20 apprentices could be hired yearly. In addition, over 50 new AMEs will be needed (in Saskatchewan) in the next five years.

The pre-employment model is the preferred option for the potential AME training school. The training delivery should be administered by SIAST. The M1 license is the preferred scope of training. Other avenues such as international students, military students, and distance learning should be explored at a later date. The program should accommodate 15 –20 students and at least two instructors. One of the instructors should have extensive experience and the ability to teach more than 70% of the course load. The second instructor should also have administration and quality assurance responsibilities. The curriculum should be purchased from CAMC.

The estimated capital costs for an AME training program will approximate $1.8 million. This assumes that an existing building/ hangar can be renovated for $300,000. And, it also assumes a building size of 15,000 ft² on a land base of 44,000 ft². If a new building is required, either the operating costs (on a lease basis) or the capital costs (on a purchase basis) may rise. Annual operating costs are estimated to be $710,000; including lease and / or amortization costs. Instructor salaries represent a large portion of these ongoing costs. These annual operating costs will be a major ongoing cost consideration. The operating cost estimate does not include the cost of inflation.

A location analysis was conducted whereby four locations (Regina, Moose Jaw, Saskatoon, Prince Albert) were compared and evaluated. In addition, requests for information were sent to the respective cities for submissions or proposals regarding proposed sites, building/ hangars and possible concessions. The most important criteria for a proposed training institute is close proximity to the aviation industry. This is important for any training program in order to have industry collaboration, donations, and mentoring; as well as graduate employment opportunities within the area. While a location analysis was completed by the consultants, a location decision was deferred by the Steering Committee. A sub-committee will review the consultants' information and analysis and they will further examine criteria for a location this Fall.

The business case focused on sources of funds needed to meet the capital and operating costs for the proposed aviation school. A financial model (example) was developed to illustrate the level of funding required from each of the possible funding groups. The funding model assumes that funds will be derived from all levels of government as well as the Saskatchewan aviation industry. Bombardier Aerospace and the Prince Albert Grand Council in concert with the Federation of Saskatchewan Indian Nations are also identified as possible sources of funding.

A milestone schedule is also presented. It notes the major tasks to be accomplished and the time needed to conduct these tasks.

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Feasibility Study for Aircraft Maintenance Engineer (AME) Training in Saskatchewan

1. Introduction

An AME is an Aircraft Maintenance Engineer who is licensed by Transport Canada to maintain, repair, and overhaul aircraft. The AME is responsible for releasing the aircraft before flight.

Of the 11, 569 licensed and active Aircraft Maintenance Engineers (AMEs) in Canada, only 228 are currently employed in Saskatchewan. This is one of the lowest provincial AME counts in Canada. According to the recent Trimension study[1], about 4.35 million dollars of aircraft maintenance work is currently sent out of the province annually because it cannot be performed by Saskatchewan Approved Maintenance Organizations (AMOs) due to a lack of trained personnel.

Currently, there are no training opportunities for Saskatchewan workers to train to become certified AMEs without leaving the province. For potential AME candidates, there exist two possible training routes to becoming licensed:

An AMO is an Approved Maintenance Organization that is licensed by Transport Canada to perform aircraft maintenance, repair and overhaul functions.

- Apprenticeship Program
- Pre-Employment Program

While some companies prefer their employees to obtain certification through an apprenticeship program, this course of action has seen limited success. In fact only a limited number of candidates across Canada each year complete the AME requirements through an apprenticeship program and successfully write the Transport Canada exam. On the other hand, the pre-employment program graduate several hundred students a year who go on to obtain their AME licenses.

McNeal & Associates Consultants Ltd., aviation management consultants, were retained by the Saskatchewan Aviation Council (SAC) to conduct a feasibility study to determine if there is suffient demand to establish and operate an AME training program. Funding for the study was provided by Saskatchewan Post-Secondary Education and Skills Training and Western Economic Diversification Canada.

[1] Trimension Study, June 2000

2. Objective

The Saskatchewan Aviation Council (SAC) wishes to determine the feasibility of establishing an AME training program in Saskatchewan. Moreover, if such a program is deemed feasible, where should it be located and how should the training be delivered? Lastly, what startup capital costs and operating costs should be expected in establishing a new program?

If the proposed AME training program is determined to be feasible, a corresponding business case will be developed.

Specifically, this business case will address factors such as:

- Training Demand
- Training Delivery
- Costs
- Location

It is intended that the information provided in this study will assist the stakeholders in determining the most prudent course of action.

3. Steering Committee

SAC (Saskatchewan Aviation Council) established a Steering Committee to guide the study process. The goals of the Steering Committee are as follows:

- Increasing the number and retention of maintenance personnel
- Increasing industry capabilities, such as avionics
- Achieving appropriate aboriginal representation in the Saskatchewan aerospace industry

Members of the Steering Committee represent agencies of the Saskatchewan and Federal Governments, Saskatchewan education institutes, the aviation industry, and the membership of the SAC. Appendix II lists the Steering Committee members.

4. Approach and Scope

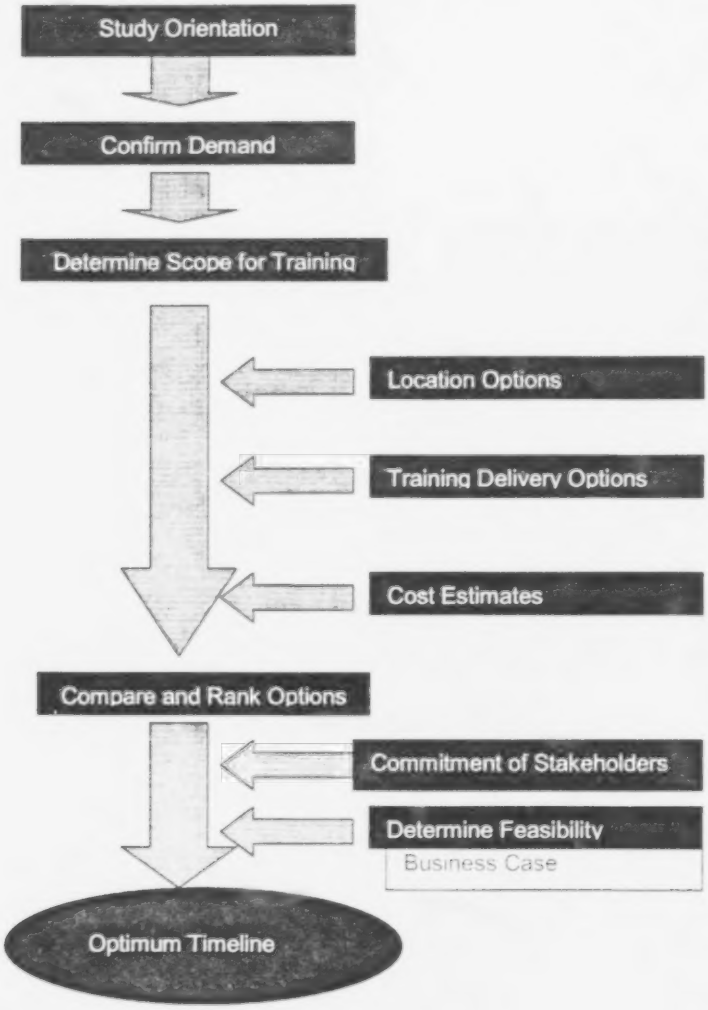


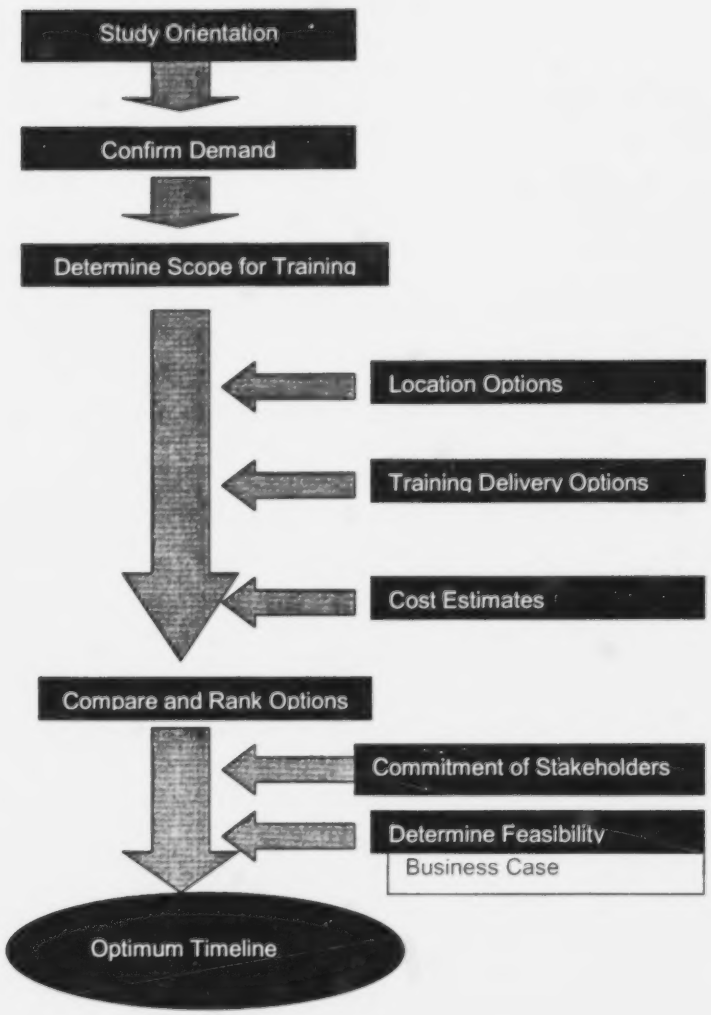
Figure 1 – Study Approach and Scope

While conducting this study, McNeal and Associates traveled to various aviation activity centres in Saskatchewan.

At each of these locations, the consultants interviewed flight operators, maintenance organizations (AMOs), training institutes, as well as airport and community officials. The consultants also interviewed individual AME's and potential AME candidates.

In assessing the need for an AME training program in Saskatchewan, the consultants circulated questionnaires to potential AME employers such as flight operators and maintenance organizations. Furthermore, in order to gauge interest among potential AME candidates, a questionnaire was also circulated amongst Bombardier Aerospace technicians in Moose Jaw. Bombardier Aerospace operates the NATO Flying Training in Canada Program (NFTC). The consultants also visited / interviewed aviation training institutes in other provinces to obtain information on overall training demand and cost comparisons. Discussions were also held with aboriginal organizations to provide training access for aboriginal students.

4. Approach and Scope



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5. Study Overview

This study consists of four parts:

- Feasibility of Establishing an AME Training Program in Saskatchewan
- Training Program Considerations
- Workshop with Stakeholders
- Business Case

Demand Study-Part I

The demand study includes the following:

- General factors influencing AME demand
  - -Aircraft Fleet (global, national, provincial)
  - -Canadian AME demand
  - -Canadian regulatory influences
  - -Market trends and the economy
- Employer needs
- Results of the aviation industry survey
- Results of the Bombardier Aerospace technician survey.
- Comparison to the earlier Trimension Survey

AME Training Program Considerations

This section comprises the majority of the report and includes the following considerations for establishing an AME training program in Saskatchewan.

- Scope of training: What will be offered, and what are the regulations?

- Delivery Options: How will the training be delivered?

  Incorporate with existing training institute (eg SIAST[2])
  Independent training institute
  Distance education
  Subsidized pre-employment training (out of province)
  Status Quo (eg Stevenson Aviation Technical College apprentice program)

- Cost Estimates

  Input and Opinions
  Space and Cost Estimates
  New Building Construction Cost Estimates
  Renovation Cost Estimates

- Location: Where will the training be offered?

  Moose Jaw
  Prince Albert
  Regina
  Saskatoon

Workshop

A stakeholders' workshop was convened on July 5, 2001 with the Steering Committee and other interested aviation industry participants. The focus of the workshop was to review the findings of the consultant's preliminary report for the feasibility section and to reach a stakeholder's consensus as the direction of the final conclusions and recommendations of the feasibility study and the subsequent business case..

The workshop also provided an opportunity to determine the level of commitment by the stakeholders to establish and maintain an AME training program. This commitment formed an important focus for the subsequent business case.

[2] Saskatchewan Institute of Applied Science and Technology

The Steering Committee decided at the Stakeholders' Workshop to proceed with an aviation-training program, which uses the pre-employment model as the means of training delivery. The preferred training delivery was to develop a partnership with SIAST. A consensus was not reached to a preferred location and the consultants were requested to solicit proposals from the four cities for available sites and costs; including possible concessions that may be available. A final location decision will made by the Steering Committee.

Business Case

The results of the feasibility study were incorporated into a business case to document the study conclusions, recommendations and the viability of an AME training program. A financial model (example) was also presented to illustrate a possible funding structure for the proposed aviation training institute A time line of milestone events to implement an AME training program was presented to assist the Steering Committee as part of the business case..

PART I – Demand Study

6. General factors influencing AME demand

It is largely believed by many in the aerospace industry that an AME training program is needed in Saskatchewan. If so, to what extent is it needed? Moreover, will current needs continue at today's levels or even increase in the future to sustain an AME training program in the province?

To answer these questions, the consultants examined historical and forecast data related to supply and demand of AMEs.

6.1. Aircraft Fleet

The demand for aircraft maintenance personnel is largely dependent on the number of aircraft in operation. Since 1991, the world's airline fleet has been growing steadily at an average rate of 4.3% each year[3]. This growth is occurring on global, national and provincial levels and is already increasing the demand for qualified maintenance personnel.

It is estimated that there are nearly 300,000 aircraft in the world, most of which are termed General Aviation aircraft. There were over 17,500 jet transport, regional jets, and turboprop aircraft in the world at the end of 2000; an increase from 12, 000 in 1991[4].

6.1.1. International Fleet

Another way to gauge demand for aircraft maintenance personnel is by examining revenue passenger kilometres (RPKs). A relationship can be drawn between RPKs and active aircraft. It is assumed, according to the Boeing Current Market Outlook 2001, that world RPKs will increase 4.7 % per annum over the next 20 years. Globally, both Airbus and Boeing predict that the world passenger fleet will almost double in the next two decades. Only one third of these new aircraft will be replacing the current fleet. The remaining additional aircraft will be built to match RPK growth[5]. Similar

[3] Boeing Current Market Outlook 2001
[4] AvSoft
[5] Airbus Global Market Forecast, May 1999

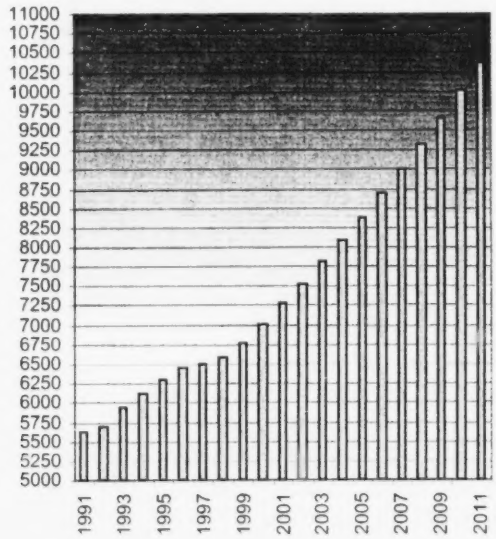
growth rates are noted in forecasts for business aircraft, helicopters and light General Aviation aircraft.

6.1.2. North American Fleet

The North American airline fleet has grown about 1.9% annually since 1991; when there were 5,700 aircraft in the fleet[6]. This fleet will grow from 7,026 aircraft, recorded at the end of 2000, to 10,367 aircraft by 2011, an annual increase of 3.6% that matches forecasted RPK growth.. It should be noted that the North American growth rate of 3.6% is less than the global rate of 4.8% since North America is a mature air transportation market[7].

Figure 2 – North American Aircraft Fleet

North American Aircraft Fleet – only includes those aircraft over 12,500 lbs.



[6] AvSoft, March 2001
[7] Boeing Current Market Outlook 2001

6.1.3. Canadian Fleet

There were 28,350 aircraft in Canada as of May 2001. Commercial aircraft account for 6,245 aircraft of this total. As shown in Figure 3 below, Canadian RPKs increased substantially in the late 1990s.[8] Following a linear regression model, [9]a forecast has been made for the next ten years.

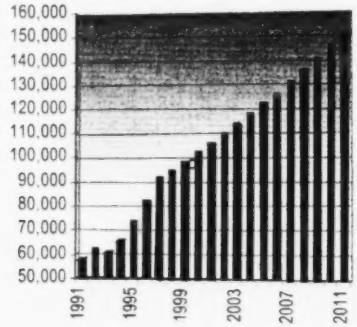
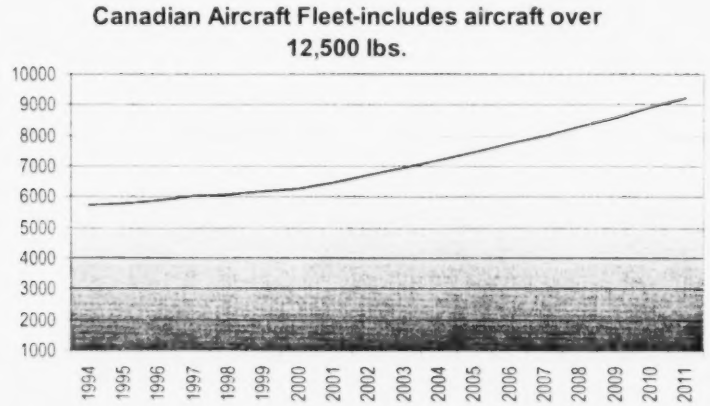


Figure 3 – Canadian RPKs

AvSoft is a global aircraft database of over 43,000 individual aircraft. A powerful search engine provides forecasts and detailed aircraft information.

To supplement the RPK forecasts, the consultants also used AvSoft to forecast the Canadian aircraft fleet. However, since AvSoft uses only confirmed and unconfirmed orders to predict fleet size, the forecast is only accurate until 2002. After 2002, the forecast matches aircraft fleet growth with the North American RPK growth of 3.6%.

Figure 4 – Canadian Aircraft Fleet

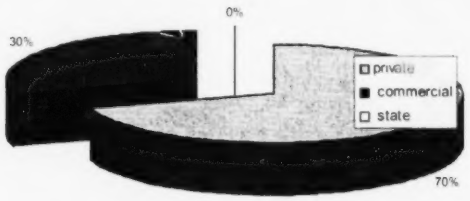


[8] Transport Canada website
[9] McNeal & Associates using Microsoft Excel linear regression model

6.1.4.Saskatchewan Fleet

According to the Canadian Civil Aircraft Registry of January 2001, 1,679 civil aircraft were registered to owners that resided in the province of Saskatchewan.

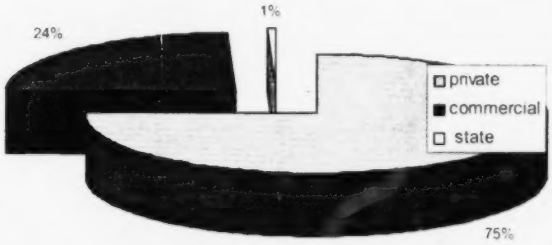
Figure 5 - Saskatchewan Aircraft Roles



70% or 1,182 aircraft are registered as private aircraft. 30% or 496 are registered as commercial aircraft. One plane is registered as a state aircraft[10].

And, 8,575 civil aircraft were registered to owners in the Prairie & Northern region of Canada. This likely represents the potential fleet that could be maintained by Saskatchewan AMOs in the future.

Figure 6: Prairie & Northern Region Aircraft Roles



[10] It should be noted that Transport Canada representation of state aircraft is in error. Known provincial government owned aircraft are represented as commercial aircraft.

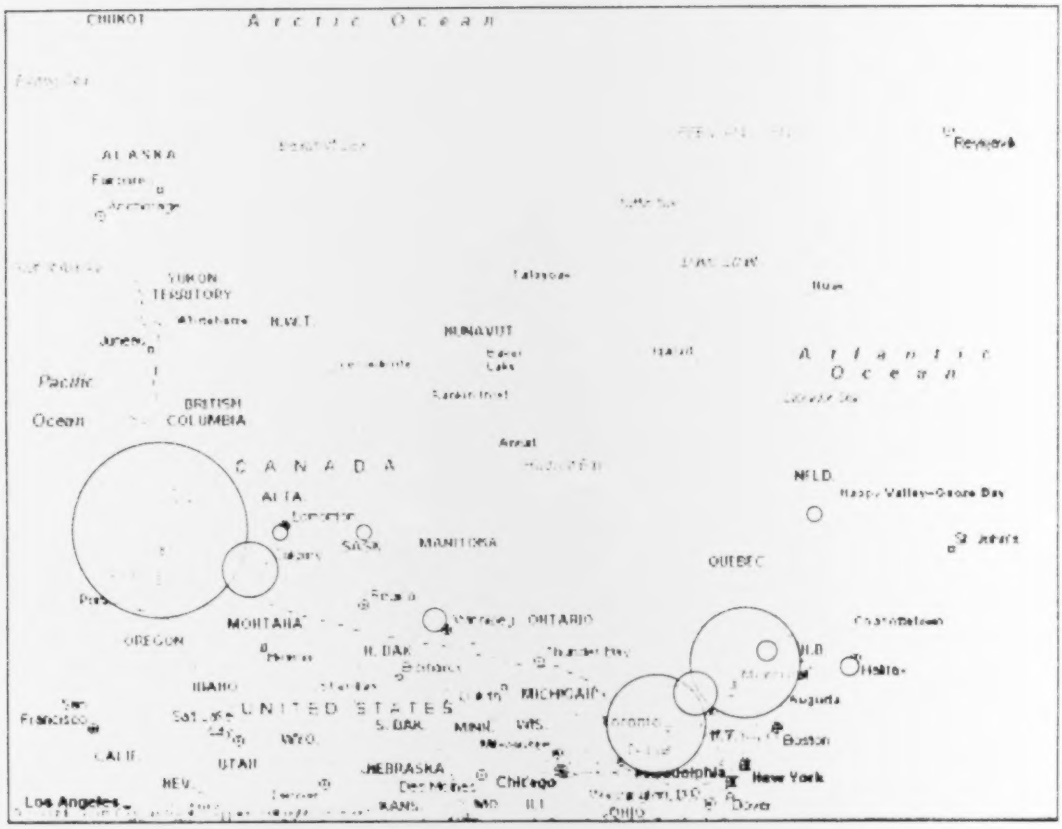


Figure 7 – Map representing Canadian AMEs

Source: Transport Canada

Scale

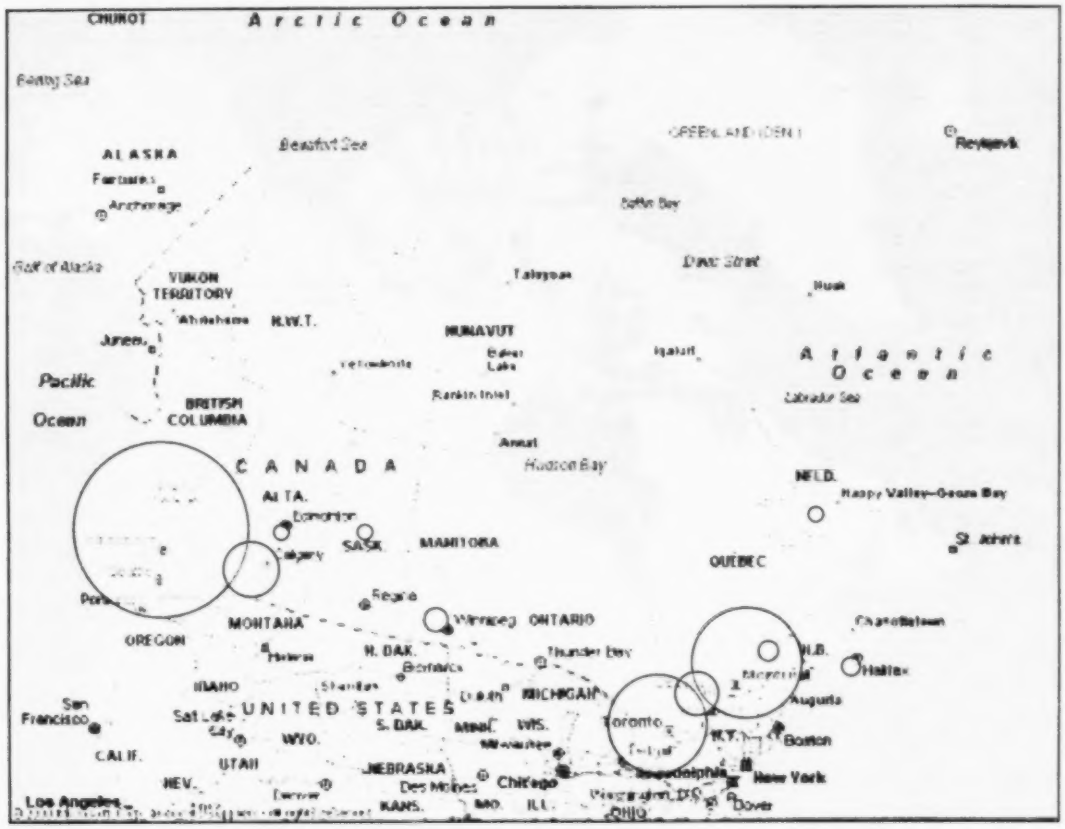
2500 AMEs

An ATO is an Approved Training Organization which meets Transport Canada certification. ATOs can include aviation training schools as well as industry held courses.

6.1.5. Canadian AME Demand

There are 11,569 active and valid AME licenses that have been issued by Transport Canada.[1] There are another 2,000 AME licenses which were issued but have not been renewed due to retirement and career changes. Transport Canada currently does not keep records on the number of apprentices working in the aviation industry, nor those enrolled in Approved Training Organizations – ATOs. Most of the AMEs are located in Quebec,

[1] As of June 2001



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[11] As of June 2001

Ontario, Alberta, British Columbia and Manitoba, areas in Canada where most of the larger aircraft fleets are based (Figure 6).

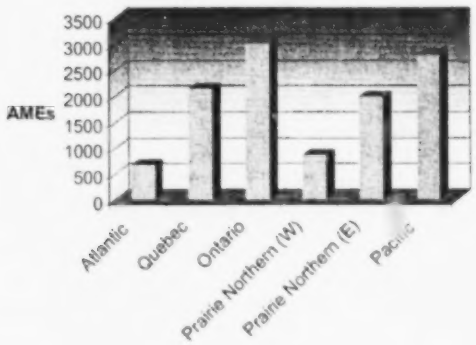
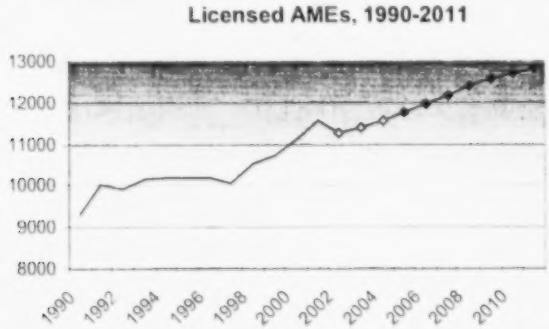


Figure 8 – AMEs by Region Source: Transport Canada

Figure 9 below provides both the historical data for AME licenses between 1991 and 2001 and the forecast[12] for the next ten years. It can be seen that the growth in the early 1990s was slow due to the sluggish economy and low demand for air transportation in Canada. In 1998, this changed. The economy started to grow rapidly and the demand for AMEs increased as air transportation demand rose. It is expected that the next decade will see continued demand for AMEs but the pace will be tempered by recent economic events in North America. It is predicted that the number of active AME licenses will increase to almost13,000 by 2011. This forecast considers the large number of AMEs that will retire over the next ten years as well as growth in air transportation demand. It should be noted that the aviation industry is highly cyclical; therefore peaks and lows should be expected in the overall demand for AMEs in the coming years.

Figure 9 – Licensed AMEs, 1990 – 2011



[12] Forecast uses Microsoft Excel linear regression model

Source: Transport Canada

6.2. Regulatory Influences

The ValueJet Airlines accident in the Florida everglades, in 1994, and the earlier Dryden Commission of Enquiry in Canada significantly changed the regulatory environment in North America. These accidents led to a series of new and revised regulations regarding maintenance procedures and administration. Oversight changes have increased the audit and diligence of the regulatory agencies. This, in turn, has required Canadian AMOs to increase their administration, record keeping of maintenance performed and their new maintenance personnel staff (with required expertise and qualifications). It also shifted responsibility for maintenance to the AMO and the individual AME releasing the aircraft for service.

While the demand for trained AMEs is growing to match increases in the world's fleet and RPKs, Transport Canada regulations have also added to the demand. Transport Canada has been increasing the responsibility of AMEs. Due to this, more and more companies in the aviation industry are actively seeking qualified AME personnel to meet the increased workload. Previously, many small firms hired and retained mechanically- minded people who lacked accreditation or post-secondary education. Now, these same personnel are finding work in other industries that do not require the formal training now mandated by these new regulations. It is expected that regulations will continue to be factor in assessing future demand for AMEs.

6.3. Economy and Market Trends

As noted earlier, the economy and the market for air transportation are principal drivers for maintenance personnel; but there are other factors to consider. Some of these are described herein.

6.3.1. Wages

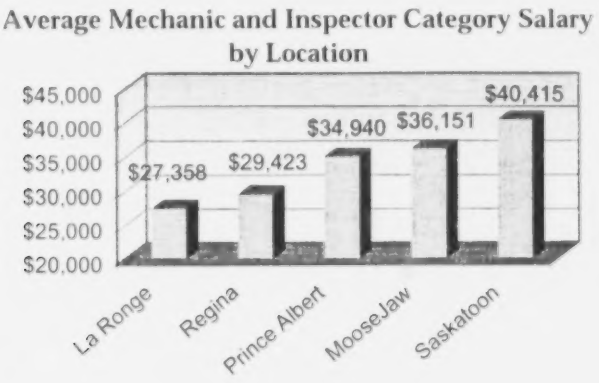
Human Resources Canada (HRDC) reports, according to the 1996 census, that the overall average wage for Canadian aircraft mechanics and inspectors was $43,224. This average increased to $57,141 with more experience and age. Mechanics' and inspectors' wage levels have increased since 1996. Air Canada has some senior maintenance personnel with annual wages over $80,000, leading the Canadian industry in wages[13].

[13] Air Canada International Association of Machinists and Aerospace Workers (IAMAW) 2001 Agreement

Perhaps, one of the factors influencing a suitable candidate to become interested in becoming an AME is the wages. Wage levels have lagged behind other industries; particularly for apprentices. Furthermore, while the average income in Saskatchewan for the aircraft mechanic and inspector category was only$34,390 in 1996, there were significant wage differences from city to city. Figure 10 below illustrates this point. Only Saskatoon approached the national average in 1996. These wage rates have increased over the last five years and are are likely now at par with the major Canadian centres.

Figure 10 – Average AME Salary by Location (HRDC 1996)

Source: HRDC Website, June 2001



6.3.2. Competition

There will be competition from established training institutes for Saskatchewan AME candidates. Saskatchewan students are already attending these schools.

Two training aviation institutes, Stevenson Aviation Technical College and Southern Alberta Institute of Technology (SAIT), are about to embark on large expansion programs[14]. These two colleges presently supply most of the maintenance personnel to Saskatchewan (Please refer to fig. 12). Stevenson has received $7.4 million in new funding to expand their aviation-training program. This expansion will take place in a new facility to be collocated with Red River College's aviation programs in Winnipeg (near the airport). Stevenson will, in 2002, introduce, for the first time, a pre-employment model. The apprenticeship training will remain but the program will likely move from Portage La Prairie (Southport) to the new Winnipeg campus in the near future. And SAIT, while expanding, will also move their campus from downtown Calgary to the airport. Both of these expansion plans were a direct result of Air Canada's announcement of a maintenance expansion strategy. These two colleges, in particular, will compete with a proposed Saskatchewan AME training program on two fronts: attracting students and finding employment for graduates.

BCIT (British Columbia Institute of Technology), in Richmond, B.C. and Northern Lights College of Dawson Creek, B.C.; are two training colleges that also provide training to some Saskatchewan students.

BCIT offers an AME M license program as well as structures, avionics, gas turbines, components, aircraft interior, structures manufacturing, SikorskyS61 rating, Bell 212 rating, electronics, avionics, and electrical courses. 651 students attend these courses at the airport campus. There is one chief instructor, 18 full time instructors, and 28 relief instructors to instruct the students. There are eight concurrent classes with a new class starting every eight weeks. The M license-training program requires 1800 hours of instruction over two years.

Northern Lights College currently has three classes of AME students with 17 in each class. Classes start every 5 months and each semester is 10 months with a two-month break. In the past few years they have added equipment and capabilities in composite repairs, electronics and non-destructive inspection (NDI). They have also introduced human factors training. Six instructors and 1 department head are responsible for instruction.

The former SIAST report, completed in September 2000, provides details on the other training colleges located in Eastern Canada.

[14] Interviews with Len Blackmore, SAIT; Dennis Doersam, Stevenson Aviation Technical College

It is reported that most aviation training colleges in Canada have waiting lists for student admission. Some colleges have a two year waiting list prior to admission.

6.3.3.Technology

Although there have been increased duties given to AMEs, there have also been technological advances that provide these workers with more efficient alternatives than in the past. Most notably, the introduction of computers and maintenance software has reduced maintenance planning time and improved record keeping. Newer aircraft have higher dispatch rates due to more durable materials, better aircraft designs and built-in test equipment. These innovations have lowered maintenance requirements while decreasing the AME's workload. It is not expected that technology will result in a decreased demand for AMEs.

6.3.4. AME Work Image

Aviation, to some extent, has lost the glamour it had in the past. Young people are not attracted to the industry for a career since it does not offer the advantages of other competing high technology industries. The aircraft mechanic, in particular has a relatively poor image in the minds of youth with regard to working conditions, wages and the cyclical nature of aviation. The industry has not done a good job of attracting young people and showing them the advantages of an aviation career. The aviation industry will have to actively participate in an awareness campaign to change the perceived image of maintenance workers if it is to compete for these human resources. The Canadian Aircraft Maintenance Council (CAMC) is attempting to overcome the poor image with a promotional campaign aimed at high school students. CAMC has also provided light aircraft to several high schools to encourage an interest in aircraft mechanic training.

6.3.5. A Highly Cyclical Work Environment

The aviation industry experiences large troughs and peaks in output. This cycle mirrors economic activity and prosperity closely. As shown by figure 3, Canadian RPK's (Revenue Passenger Kilometers) were almost stagnant from 1991 to 1995. This mirrored the economic recession of the early 90's. Correspondingly, huge RPK gains were made in the late 90's during a period of national prosperity. Aircraft Maintenance Engineer demands experience similar peaks and troughs but at different times. For example, figure 9 shows that the amount of licensed AME's was almost stagnant from 1991 to 1997. Then (almost 2 years after RPK's increased substantially), AME Licenses surged upward. As the forecast in figure 9 shows, there will almost certainly be periods of correction. During periods of slack maintenance demand, personnel are laid off. These layoffs have scarred the AME work image. One training college, in particular, is attempting to change this: ENA or L' Ecole nationale d'aerotechnique du college Edouard-Montpetit. By

teaching a heavier content in structures, their graduates have the ability to work in the manufacturing sector as well as aircraft maintenance. They also use CAD /CATIA software so that graduates are able to support engineers during project design and implementation. This could provide steadier employment to graduates since the manufacturing and maintenance sectors usually experience their peaks and lows at different times.

6.4. Comparisons to Past Surveys

What are the main differences between key findings in June 2001 and the Trimension Study of June 2000? The table below summarizes the two studies.

Table 1 – Comparisons to Past Surveys

Trimension Study, June 2000	Common Ground	McNeal & Assoc., June 2001
Surveyed 12 AMOs		Surveyed 22 AMOs + 7 others
35 AMOs in Saskatchewan		39 AMOs in Saskatchewan
	High International Demand is Present	
	Primary reason for turnover: AMEs are leaving the province for larger firms	
10 Saskatchewan students at Stevenson		22 Saskatchewan students at Stevenson
13 Saskatchewan students at SAIT		5 Saskatchewan students at SAIT
240 AMEs in Saskatchewan		228 AMEs in Saskatchewan
Survey results forecast a need for 35 direct maintenance personnel in the next 2 years		Survey results forecast a need for 22 direct maintenance personnel in the next two years
6,074 Canadian commercial aircraft in 1998		6,245 Canadian commercial aircraft in 2000
137,000 A&P's employed in the U.S.		140,000 A&P's employed in the U.S.
Definition of an AME is broad		Definition of an AME is only those that are licensed
	Changes in the AME occupation are related to technology and licensing	

7. Employer Needs

A copy of the employer questionnaire can be found in Appendix VIII

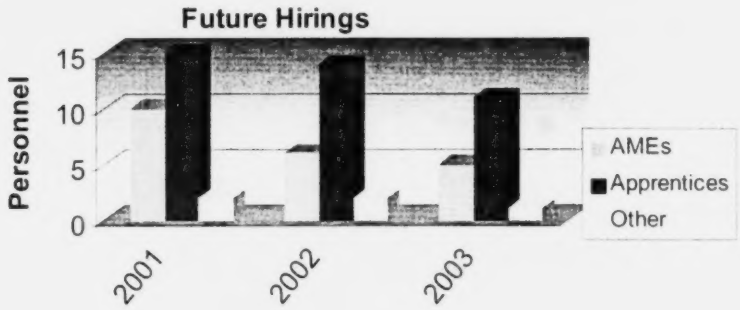
Currently, Saskatchewan's 228 AME's are employed at approximately 40 AMOs (including Air Canada Regional Airlines). To better understand future demand for AME's in Saskatchewan, the consultants sent questionnaires to all charter flight operators, flight training schools and AMOs. At those firms that did not do their own aircraft maintenance, the consultants confirmed where their maintenance was being done. Of the 70 questionnaires distributed, 30 were completed and returned; the results of those are provided in sections 7.1 and 7.2 below. Of the 40 AMOs in the province, responses were received from 22, a 55% response rate. All the larger AMOs responded to the survey.

The consultants also conducted interviews with several AME employers to better assess the demand for AMEs in Saskatchewan.

7.1. Forecast Positions

When Saskatchewan aviation companies were asked how many, if any, workers they intended to hire over the next three years, many responded that they were planning to increase their workforce in the near future. Of the 30 respondents, the results are as follows:

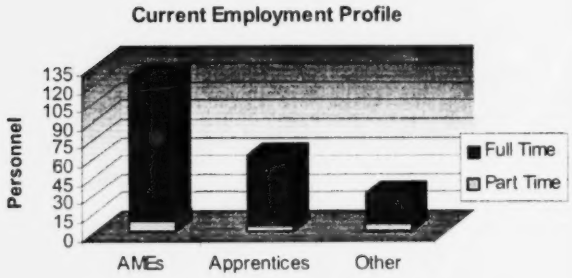
Figure 11 – Future Hiring Forecast



Source: McNeal & Associates Survey, June 2001

7.2. Other Survey Results

Figure 12 – Current Employment Profile

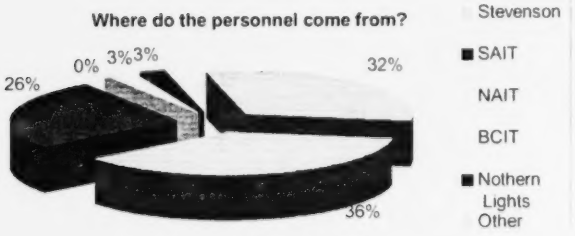


Currently, AMEs out-number apprentices two to one. A typical ratio in industry is 7:3. Over 95% of the employees are full time.

Figure 13 – Planned Hiring

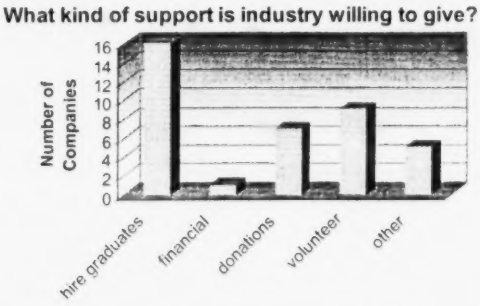
This shows that a larger percentage of apprentices vs. AMEs will be hired in the future. This could be due to the larger cost associated with hiring an AME.

Figure 14 – Overview of Training Experience



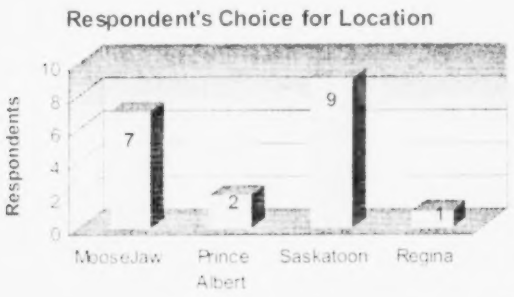
This chart shows that most students come from SAIT and Stevenson.

Figure 15 – Support by Industry



This chart shows that many respondents were willing to hire graduates and volunteer. However, only one respondent indicated that they would be willing to donate money.

Figure 16 - Location Preference



Saskatoon is the preferred location, followed by Moose Jaw from the survey results.

Please note that only 19 respondents answered this question.

7.3. Selected AMO Interviews

7.3.1. North Central Helicopters-La Ronge

North Central Helicopter will support appropriate training schools that will provide trained people. Due to the shortage of AMEs, North Central Helicopters began the process of developing its own ATO. These plans have now been temporarily shelved until the results of this study are known. Due to the shortage of AMEs with helicopter experience, North Central Helicopters has had to contract two out- of- province AMEs. Each of the contracted AMEs is paid $300/day plus $30/hour for every hour the helicopter is flying (6-hour days), as well as $100 a day for expenses. In total, North Central Helicopter is paying each AME over $14,000 a month. Having local AMEs and apprentices would lower this cost considerably.The company is willing to provide funds to support an AME training program in the province.

7.3.2. Northern Air Operators, La Ronge

Northern Air Operators (SERM) is one of the largest AME employees in the province with 24 currently on staff. They are a provincial agency established to provide water bombing services for forest fire protection. They operate a fleet of Grumman Trackers and Bombardier CL-215 aerial water bombers. SERM and the provincial government are evaluating adding turbine-powered CL-415 aircraft to replace the CL-215s. They require apprentices and AMEs for their current operations (without accomodating a possible expansion of the fleet). Over the next 3 years, they will require another AML and 5 apprentices. In addition, they are willing to commit to hiring graduates from an AML training program established in Saskatchewan. Northern Air

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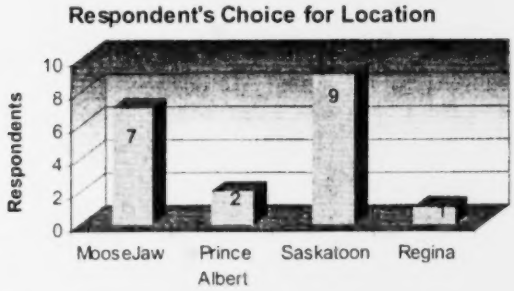

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Operations is also a supporter of aboriginal AME training and have aboriginal people on their maintenance staff.

7.3.3. Bombardier Aerospace

NFTC (NATO Flying Training in Canada) operations commenced in 1999 with flight training operations for instructors. NFTC is a joint venture between the Government of Canada and Bombardier Aerospace. DND (acting for the government) provides infrastructure, instructor pilots, and program management; whereas Bombardier Aerospace provides all services, equipment, and two new fleets of advanced aircraft. The purpose of NFTC is to train students from NATO member countries, at the least cost and highest standards, to become a flexible and thinking fighter pilot.

Bombardier Aerospace has roughly 100 maintenance technicians at the Moose Jaw base, and a further 25 stationed at Cold Lake. The technicians maintain the BAe Hawks and the Raytheon Harvard II's in the NATO program.

Bombardier wishes to progress to a typical age and service profile of their technicians in the future

Bombardier Aerospace hired most of their maintenance technicians directly from the Canadian Armed Forces. Most have 20 years experience in the Armed Forces and were selected for their experience working in a military maintenance environment. Bombardier Aerospace wanted to be able to deliver its contractual obligations immediately and could not afford to hire inexperienced people. Currently, there is no demand for new technicians but as the contract continues, there will be attrition due to retirements and other factors. These existing technicians will have to be replaced. Bombardier Aerospace wishes to progress to a typical age and service profile for their technicians in the future. This would replace attrition and thwart any future mass cumulative employee experience reductions.

As these ex-military technicians are replaced, technicians from military sources will become scarce. Licensed AMEs will become more valuable to Bombardier Aerospace due to their flexibility of working on both military and civil aircraft. Offering an AME license to future young technicians increases employment opportunities with Bombardier Aerospace and its various divisions. And, if the technicians leave NFTC they can readily work in the civilian market. There is also the future possibility that maintenance training could be offered to NATO countries similar to the current NFTC flying training program.

Bombardier estimates that it will require approximately 5 AME's each year to replace technicians through retirement and attrition. Bombardier is also prepared to assist the development of a Saskatchewan-based AME training program. A separate questionnaire was developed for the Bombardier Aerospace technicians due to their number and possible impact on future AME training requirements. These survey results are noted later.

7.3.4. Yorkton Air-Yorkton

Yorkton Air specializes in agricultural aircraft maintenance and general aviation aircraft. Due to the decline in the agriculture market, Yorkton Air is in a price squeeze. Labour costs for AMEs and apprentices are rising but these costs cannot be passed onto the agriculture industry.

Yorkton Air has seen some maintenance personnel leave to work at Air Canada and Bombardier. There is frustration among owners of smaller firms that are unable to compete with larger companies that can afford to train their workers. It was suggested that smaller firms should be compensated for training apprentices leaving to be hired by larger out-of-province firms.

Yorkton Air has a relatively young maintenance staff consisting of two AMEs and 4 apprentices. However, it is expected that when the apprentices obtain their AME licenses, they will leave for larger firms. In order to replace the expected turnover, Yorkton Air will need 2 more AMEs and 3 apprentices. This assumes that there will be some future activity in the agricultural aircraft maintenance business

7.3.5. Transwest Air-Prince Albert

Transwest Air is a recent amalgamation of Athabaska Airways and Sask Air. It operates 40 aircraft, including turbine-powered Beech (Raytheon) 1900Ds and BAe Jetstream 31s for scheduled services, as well as a variety of smaller charter airplanes. The main base is located in Prince Albert, although there are operations in other centres including: Saskatoon, La Ronge, Stoney Rapids and Lynn Lake (seasonal base).

Transwest now employs over 60 workers in its maintenance department, of which 50 are direct maintenance workers. Of these maintenance workers, 25 are AMEs and 25 are apprentices. However, several apprentices will be getting their AME licenses in the near future and 15 recently rewrote their Transport Canada exams. Some of these newly licensed AMEs are expected to leave for other opportunities.

On average, Transwest hires approximately 4-5 apprentices each year and they are currently looking for 4 AMEs and 6 apprentices. The AME/apprenticeship hiring selection process for Transwest Air is tight but not critical. On the other hand, avionics technicians are in great demand and the situation is critical. Transwest has been advertising, but have been unsuccessful in finding avionics technicians. Transwest will support a Saskatchewan AME training program.

7.3.6. West Wind Aviation-Saskatoon

West Wind Aviation is a large charter operator with a mixed fleet of business jets and twin- engine aircraft. They also operate scheduled air services for mining crew rotations into Northern Saskatchewan using BAe Jetstream 31 aircraft. West Wind is a Shell Aero Centre providing Fixed Base Operation (FBO) services for refueling aircraft and providing line maintenance for business aircraft. West Wind currently has 14 AMEs and 4 apprentices on staff. West Wind has expansion plans that will require additional maintenance personnel. Four additional apprentices are being sought for their expansion plans. The company has also experienced some turnover as 4-5 AMEs have left in the last few years. Some have relocated to larger operators, including Air Canada in Montreal. West Wind will support an AME training program that will allow the development and growth of the Saskatchewan aviation industry.

7.3.7. Southern Aviation-Regina

Southern Aviation is typical of a number of small AMOs in the province. They are owned and operated by an AME with little or no maintenance staff due to the tight economics of operating a small business. Southern Aviation operates 3 light aircraft for charters and contract the pilots on a part time basis. The owner does the maintenance. During the slow winter months, third party aircraft restorations are done and sheet metal workers may be contracted to provide repairs and other modifications. Apprentices do not have the experience to do the required work nor can the owner afford the time to supervise apprentices. A full AME is too expensive to employ based on the business volumes needed to support the AME.

7.3.8. Elite Aero-Prince Albert

Elite Aero operates an AMO to maintain aircraft for operators in the area such as Northern Dene Airways and an FBO for fuel and aircraft ground handling. They have 7 full- time AMEs on staff and another 3 who work part time. There are 5 full- time apprentices and another 2 on a part- time basis. Elite Aero plans to add 8 AMEs over the next three years if they can be hired and 6 new apprentices. Elite Aero also wants to add a trade technician to its staff.

7.3.9. Osprey Wings- La Ronge

Osprey Wings operates a charter air service into Northern Saskatchewan with a fleet of eight aircraft including a DHC-6 Twin Otter on floats. Most of their flying takes place during the summer taking tourists into fishing lodges. And, they operate into small communities when transporting supplies and residents (to visit friends and relatives or for health reasons). Osprey Wings has two AMEs on staff and no apprentices at the current time. The two AMEs are very experienced and have been with the company for several

years. They do not plan to add additional staff. During the winter months they do send aircraft to TC Aviation in Saskatoon for structural repairs and other maintenance work that cannot be done in the north.

7.3.10. Mitchinson Flying Service-Saskatoon

Mitchinson Flying Service operates a flight training school and charter operation. They currently have one AME on staff and two apprentices. They contemplate adding one apprentice next year and a second in 2003.

7.3.11. Saskatchewan Air Transportation Services- Regina

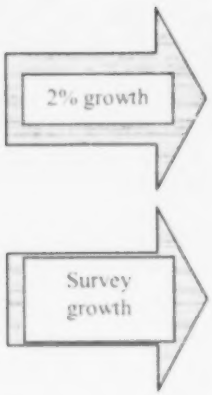
The government air service provides air transportation for senior government officials as well as operates the provincial air ambulance service. They have a fleet of turbine- powered Piper Cheyennes for the government executive flights, and Beech Kingairs for the air ambulance service. They operate from two bases: Regina and a satellite base in Saskatoon for air ambulance services. There are 4 AMEs at Regina and 3 in Saskatoon. Since it is a government air service, it attracts senior AMEs and they do not have any trouble recruiting AME candidates. However, they do not contemplate hiring additional staff in the near future. An increasing amount of the Cheyenne work is being subcontracted out, particularly avionics work which is sent to Kitchener, Ontario or Calgary, Alberta as there are no Saskatchewan firms with this avionics capability.

7.3.12. Air Canada Regional- Saskatoon

Air Canada Regional now operates the former Canadian Regional Airlines hanger where heavy maintenance and line maintenance is conducted for the Fokker F-28 fleet. There are 29 F-28s in the fleet, making it one of the largest in the world. Air Canada Regional maintains most of the fleet at Calgary and Saskatoon. The aircraft type was to be phased out of service this year due to fleet age and future Chapter 2-engine noise non-compliance[15]. Air Canada Regional does not have a substitute aircraft type and Air Canada's union contract does not allow its subsidiary, Air Canada Regional to use its Bombardier CRJ fleet. Expansion of trans border flights to the United States has prompted Air Canada Regional to return several parked F-28s back into service. It now appears that Air Canada Regional will continue to use the Saskatoon hangar and keep its personnel at least to the end of 2002. There are 22 maintenance personnel based in Saskatoon of which 15 are AMEs and two are apprentices. Several AMEs are reported to be approaching retirement age and will have to be replaced if Air Canada Regional remains in Saskatoon. But, this organization did not indicate any additional maintenance personnel were required in Saskatoon at the present time.

[15] The F-28 is under 75,000 MTOW and is exempt from current noise regulations

7.4. Summary of Saskatchewan Demand



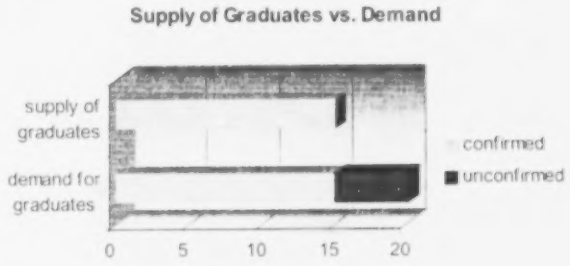
Currently, there are 228 AMEs in the Province of Saskatchewan. This figure is supplied by Transport Canada and includes those AMEs with an address in Saskatchewan. Human Resources Development Canada data (1996) suggests the same figure is 255 persons. For this study, the consultants used the Transport Canada figure. If the AME personnel growth rate were a conservative 2%, 22 new AMEs would be required to meet growth projections in the next five years. And, about 30 Saskatchewan AMEs should be returing within the next five years. This means that a total of 52 new AMEs are required by Saskatchewan industry in the next five years.

From the McNeal & Associates survey response, respondents need **20** AMEs in each of the next three years. This includes 5 required AMEs per annum for Bombardier Aerospace. And since, these respondents make up 54% of the complete AMO list, it can be extrapolated that the survey found the complete AMO industry in need of at least 50 AMEs in the next five years.

What about apprentice demand? From the survey results, it is shown that industry plans to hire more apprentices than AMEs in the future. And, survey respondents plan to hire 40 apprentices over the next three years. Extrapolating to the complete AMO list, 60 apprentices could be hired over the next three years creating a demand for 20 apprentices per annum.

Figure 17 – Supply of Graduates vs. Demand

Confirmed Apprentice demand is a verbal commitment by some operators if the AME training facility becomes operational



8. Interest among Bombardier Technicians

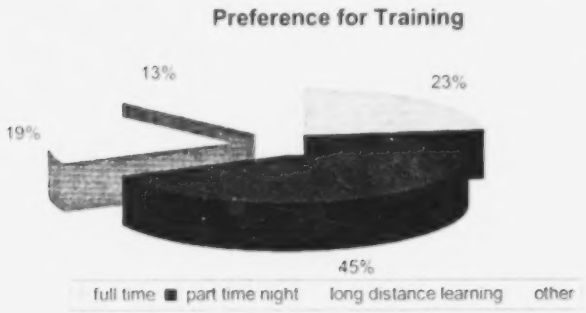
A copy of the questionnaire can be found in Appendix VII

About 100 maintenance technicians work at the Bombardier Aerospace NFTC program in Moose Jaw. All of these technicians are employed by Bombardier Aerospace to maintain military aircraft used in the program. As such, they are not required to be licensed as AMEs and only three technicians are licensed AMEs. However, given their considerable experience, these workers are prime candidates for an AME training program. Most of these technicans can qualify for an AME license with six months civil experience and write the Transport Canada exam.

To guage the employees' interest in completing training to become AMEs, the consulants distributed questionnaires. Of the 100 questionnaires sent out, 54 responses were received. The results are:

- 91% of respondents expressed interest in becoming an AME, if funding was provided
- 72% wish to complete this training within the next two years.
- 11% wish to complete this training within the next two to five years

Figure 18 - Bombardier Technician Preference for Training



- 50% expressed an interest to take other courses such as avionics, structures, power plants, etc.
- Moose Jaw is the preferred location for a training facility, followed by Regina.

Bombardier Aerospace has another 15 people who could become future candidates for aircraft maintenance technicians. These are younger people hired to fuel, clean and tow the aircraft to and from the flight line. Some of these younger employees may be interested in becoming candidates for AME training

How would AME training benefit Bombardier?

- Provides Bombardier the capacity to maintain civil registered aircraft at NFTC
- Provides Bombardier with AMEs that could be transferred to other civil maintenance operations
- AME training could be a recruitment benefit
- Provides NFTC technicians, ultimately, with more training and capabilities
- Provides new apprentices to replace turnover
- Attract young apprentices and change the demographic profile of the NFTC maintenance labour force
- Bombardier could offer maintenance training to NATO student similar to the pilot training now offered.

How would AME training for Bombardier technicians benefit the Province of Saskatchewan?

- Provides AMEs that may leave NFTC and work at other AMOs in the Province of Saskatchewan
- Some of these technicians may leave Bombardier and start their own AMOs or specialty maintenance shops
- These technicians have a lot of experience and could prove to be good mentors to other students

What are the stumbling blocks to training Bombardier technicians?

- Some technicians work day shifts for one week and then night shifts for the following week. This may make long distance training the only viable option for these technicians.
- It may be difficult to incorporate Bombardier technicians, who need fewer hours to complete the training, into the same schedule as other "green" students
- After completing the training, Bombardier technicians would still require 6 months practical experience on civil aircraft (which are not present at NFTC)
- ITARS (International Traffic in Arms Regulations) and other restrictions on foreign students working on military aircraft with US military equipment installed

9. Conclusions of the Demand Analysis

- There is a need for trained AME's and apprentices in Saskatchewan to replace retiring AMEs and match industry growth
- There is strong industry interest and support for an AME training program
- There are now 228 AMEs in Saskatchewan, one of the lowest amounts in Canada
- It is expected AMEs will increase their number slightly in the upcoming five years to about 250, considering retiring AMEs and industry growth.
- To meet the demand for future AMEs, Saskatchewan will require about 75 to 100 new apprentices to start training over the next 5 years. The first year's graduates would not be eligible for an AME license until 2006.
- There are about 22 students in the apprenticeship program at Stevenson and 5 taking pre-employment at SAIT
- The aviation industry and Bombardier Aerospace surveys indicate that 15-20 students a year could be enrolled in an AME training program if it started in 2002. This includes only M license candidates and does not include future demand for E or S licenses and industry endorsement/type course training

The next section will examine how this new AME training program could look.

PART II – AME Training Program Considerations

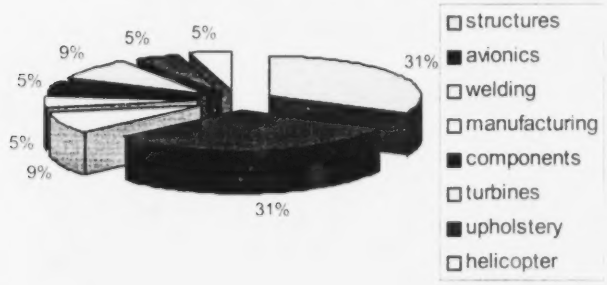
This section provides a discussion on the various training program options. It examines the proposed scope of training to be provided for a Saskatchewan AME training program and is followed by an overview of the regulatory environment that controls the establishment and operations of an Approved Training Organization (ATO). Other aviation training schools are then studied as a guide to developing an AME training program and the various delivery methods. This section also discusses aboriginal access to AME training. Cost estimates for starting and operating an AME training program are presented. Finally, the site factors are discussed and a location analysis is presented.

10. Scope of Training

The consultants have determined that an M 1 license would be an appropriate starting point for a new AME training program in Saskatchewan. This license gives the AME experience in a number of areas and serves as a "catch-all" license. The M 1 license allows the AME to work on airframe, propulsion and systems for smaller aircraft common in Saskatchewan. An M2 program for turbine and larger aircraft could be added later.

Respondents to the survey of aerospace employers found that, while an M license was first and foremost the most desirable AME certification, they also identified other skills that would be of use in the industry. The Structures (S) and the Electronics (E) licenses in particular may be warranted depending on the aviation industry needs in the future. Figure 19 below shows the perceived skill needs of Saskatchewan's AME employers.

Figure 19 – Industry Skill Needs[16]



10.1. International Students

It should also be noted that this study only considers a program aimed at training AMEs for work in the Saskatchewan aviation industry. However, as noted, the program can later be expanded to include students from other provinces and from international locations. Most of the Canadian aviation training schools take in students from other provinces (eg. Over half of Stevenson's enrollment is from other provinces). And, some of the other larger schools will reserve one or two spaces in each class for potential international students. But, training students with limited English skills presents challenges. This is especially true for the technical nature of AME training. And, one college felt that having over two international students, with the same primary language, could present problems[17]. Poor comprehension could occur if these students were not fully immersed in the English language. To attract students from other provinces and international locations marketing and promotional plans are needed as well as program changes to accommodate these students. It also has to include verification of student background profiles for accreditation purposes. International students; however, can be a significant source of tuition revenue for a training school.

10.2. Canadian Military Personnel Conversion Training

It is important to note that, due to the vast experience of many of Bombardier Aerospace's employees, Transport Canada is willing to consider giving credit hours for each technician's experience and applying these hours towards the AME requirements. This could significantly reduce the time required to complete the training program and technicians would merely "fill in" existing gaps in their skill sets. This could become the first formal program of its kind in Canada. A Saskatchewan aviation training institute, with strong links to the military, could be expanded to provide military- to-civil transition training for all military technicians leaving the Armed Forces and want to pursue an AME license.

The Canadian Armed Forces recently announced a significan reduction in the number of aircraft in the fleet. There will also be a 25% reduction in annual flying hours. This restructuring plan could result in military trained technicians being surplus to requirements between 2001 and 2004[18]. These could be potential candidates for conversion training for AME licenses.

A similar pilot program was devloped in Edmonton, where military technicians completed night school training to obtain their AME licences.

[16] Developed from McNeal& Associates Industry Survey, June 2001
[17] Interview with Andy Cole, Northern Lights College, June 2001
[18] Interview with Major Gord Danylchuk, Canadian Air Division Headquarters, August 27, 2001

When they retired from the military, upon the closure of CFB Namao, they pursued civil maintenance careers in private industry.

In the United States, Embry-Riddle Aeronautical University has specialized in this type of training. Embry-Riddle is the largest aviation training institute with over 23,000 students, two campuses (Vero Beach, Florida and Prescott, Arizona) and over a 100 training centers in the United States and Europe. They have located training centres adjacent or near Air Force bases to provide convenient civilian transition training for military service personnel who want an Airframe & Powerplant license. Embry-Riddle has also developed an extensive distance learning system to provide easy access to their training courses which is used in the conversion training.

10.3. Aboriginal Access

Aboriginal access to an AME training program is one of the considerations of the feasibility study. Aboriginal people are currently under represented in the AME population of Saskatchewan.

There are various training programs available to aboriginal and Metis people, most of which are focused on Northern Saskatchewan residents. There is a large aboriginal population in southern Saskatchewan which also needs access to training.

It is intended that aboriginal access to AME training be provided at the proposed aviation training school. Access would be the Tribal Councils and /or independent First Nations to ensure that aviation training opportunities are available.

A similar program was recently initiated at Stevenson Aviation Technical College. Supported by the Assembly of Manitoba Chiefs and the Manitoba Metis Federation, Stevenson Aviation Technical College has signed up its first class of 16 Aboriginal – Metis students to train as AMEs[19]. Commitments have already been made to hire half of the Aboriginal – Metis students once they graduate. Most will go to work for smaller carriers. These students are all sponsored.

It is understood that the First Nations or Tribal Councils will fund students to attend training institutes, but the social pressures are high if the student fails the course. Many students who may have the ability do not attend for fear of failure. Long distance learning, discussed in section 11.3, could be a good method of selecting appropriate students. Below, shows the aboriginal population by community.

Aboriginal Population by Community	
Moose Jaw	920
Prince Albert	9,190
Regina	13,330
Saskatoon	15,545

Source: Statistics Canada 1996 census

[19] Source: Wings Issue 3, 2001, page 4. Maintenance & Overhaul Supplement

There are three aboriginal and Metis institutes located in Saskatchewan. These are:

- The Saskatchewan Indian Federated College (SIFC)
- Gabriel Dumont Institute of Native Studies (GDI)
- And Saskatchewan Indian Institute of Technologies (SIIT)

Northlands College in La Ronge, and its affiliate centres, are also important to the aboriginal training programs.

10.4. Apprenticeship Model vs. Pre-employment Model

As noted earlier there are essentially two possible ways in which potential AME candidates can become certified:

- Apprenticeship Model
- Pre-Employment Model

10.4.1. Apprenticeship Model

The present Saskatchewan apprenticeship model sees potential AME candidates first hired by Saskatchewan aviation companies as apprentices. Over the next four years, the apprentices will learn on-the-job skills while also attending school outside the province for about 12 weeks each year for formal training. At the end of the four years, the apprentice will have significant experience in the industry as well as over 1000 hours of classroom instruction. The student then writes an extensive set of difficult exams administered by Transport Canada to become a licensed AME. The Saskatchewan Apprenticeship Commission administers the program for Saskatchewan apprentices. It makes arrangements with Stevenson Aviation Technical College in Manitoba to provide the basic approved training. Last year there were 18 Saskatchewan students attending Stevenson. This year there are 22. Saskatchewan has a reciprocal apprenticeship agreement with Manitoba whereby it accepts Manitoba students for other trades training at Saskatchewan polytechnical schools. The Province of Saskatchewan does not pay for any aviation apprentices under this agreement and in fact, benefits financially from the agreement. Stevenson is currently the only institution in Canada that provides an apprenticeship model for aviation training.

10.4.2. Pre-employment Model

The pre-employment model is considerably different than the apprenticeship model. In this model, students enroll in an AME training program at a post-secondary institution without any aircraft experience. During the next 18 months, they will spend about 1800 hours acquiring the skills of an AME. Throughout their schooling, the students write Transport Canada AME examinations, after certain topics have been covered. Following their schooling and obtaining a diploma, the AME students are required to obtain 36 months of practical experience. They can write the Transport Canada exam any time after graduation, but do not receive the license until the required work experience is accumulated in the personal logbook. This final examination is considerably more manageable than the comprehensive exam administered to apprentices. The pre-employment model is the path that most AME candidates now select. There are 12 Canadian colleges that offer the full pre-employment program for M license training. The largest training institute in Canada is Ecole d'Aerotechnique du College Edouard Montpetit in St. Hubert, Quebec. It trains 1,500 students in its various aviation programs. Air Canada prefers the pre-employment model for their maintenance candidates.

10.4.3. Training Program Comparisons

One of the chief complaints from the aerospace industry concerning the apprenticeship model is that these apprentices enter the workforce with little experience and are unable to undertake significant responsibilities for the first few years. However, employers also point out that apprentices are essentially "locked in" to their positions during those four years so retention is guaranteed in the short term. And, since a training investment is assumed by an employer, better screening of suitable candidates may occur. The employers must actively participate in the apprenticeship program by providing not only employment, but also supervision and mentoring of the apprentice. This requires an AME's valuable time as well as the company's commitment to the apprenticeship program for a number of years.

The pre-employment model provides graduates with some employable skills, but this also makes them employable at companies outside Saskatchewan. The students cannot be employed until graduation, about two years after the program commencement. Many employers need personnel now and cannot wait for graduates. On the other hand, the graduates have completed their formal training and do not have to take time off from work to attend classes.

Currently, the majority of Saskatchewan's AMEs obtained their certification via a pre-employment program. The chart below shows that, while a significant number of maintenance personnel have been trained as apprentices at Stevenson Aviation Technical College, most are graduates of a pre-employment program.

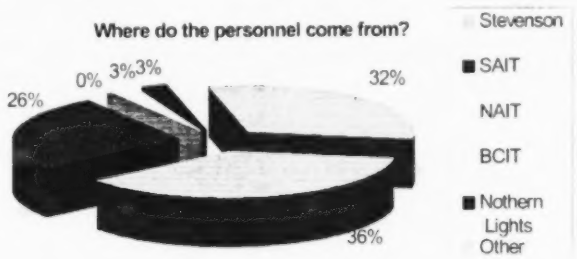


Figure 20 – Training Origin of Personnel

Source: McNeal & Associates Survey, June 2001

In discussions with aviation industry employers it was felt that the employees from the pre-employment training model were more desirable since their skill sets were much broader than those of the apprentices.

There is also a perception among employers that once graduates receive their training, they will leave Saskatchewan in search of higher wages. There is hesitancy to develop an AME training program for the benefit of other provinces. Many firms feel they are the training ground for the larger AMOs and airlines, and accept inevitable turnover rates. Other employers also pointed out that some AMEs, who had left the province for higher paying jobs, have returned for a life style change. And, some felt that unless there was an AME training program, Saskatchewan would never attract additional firms to invest in or expand the aviation industry and to build the industry to a "critical mass".

10.5. Regulatory Issues

There is an industry perception that TC and CAMC standards may merge one day.

Transport Canada is the regulatory agency that governs the accreditation of Canadian aviation training institutes to be Approved Training Institutes (ATOs). Transport Canada regulations also govern Approved Maintenance Organizations (AMOs) that employ aircraft maintenance personnel including AMEs. These regulations follow, in principal, the standards set by the International Civil Aviation Council (ICAO). In addition to Transport Canada regulations for ATOs, The Canadian Aircraft Maintenance Council (CAMC) has been established as a forum for maintenance related issues and to act as an interface between Transport Canada, ATOs, unions, aviation associations and the aviation industry. Over the past few years, CAMC has taken the leadership to develop standards for various job classifications within the aviation industry. To date, CAMC has developed 15 trade standards including qualifications and work experience needed. This includes AME training and experience. CAMC works with the National Aviation Training Association that represents the training colleges across Canada.

10.5.1. Transport Canada

Transport Canada Aviation has updated and revised many of its aviation safety related regulations. The previous Air Regulations, Air Navigation Orders and Air Regulation Series have been replaced by the Canadian Aviation Regulations (CARs). The CARs have been developed through the Canadian Aviation Regulation Advisory Council (CARAC), a joint undertaking of Transport Canada Aviation and the aviation industry.

M1: Normal (Small) Aircraft

M2: Turbine (Large) Aircraft

The new CARs clarify and set out the training requirements to obtain and retain an Aircraft Maintenance Engineer (AME) license and the attendant duties and responsibilities. These regulations fall under the heading CARs 566. In general, the changes in CARs provide broader application of privileges by the consolidation of former ratings. The new AME license comprises four possible ratings, two general (M1 and M2) and two special (Electronics and Structures).

Category M type ratings are now consolidated into only two ratings, M1 normal (small) category and M2 turbine aircraft (large) category. There no longer exist any specific ratings for airframes, engines, propellers, components and systems of aircraft. Separate ratings for fixed wing and rotary - wing have also been eliminated. The total experience requirements for the Category M license remains the same, 48 months.

There is nothing in CARs 566 that dictates the number of instructors needed for an Approved Training Organization (ATO). The regulations only indicate a need for qualified instructors. However, if the students enrolled in a program do not achieve the required marks (70%), Transport Canada may audit. Past audits have recommended more qualified instructors, additional instructors, etc. In a few cases the accreditation of the training institute has been suspended or revoked.

The standards are very rigid and a new training school will need to be very familiar with the ATO requirements since there can be no deviations from the requirements.

Transport Canada has approved certain basic training courses. Although these training courses meet the basic training requirement (Minimum 1000-hours curriculum), it does not entitle a successful graduate credit towards the total experience required for the issue of an AME license. An example of the basic training program is ICS Canada Ltd. Based in Montreal, Quebec, **ICS** (International Correspondence School –Canada Ltd.) offers a basic training through correspondence. The program content is very similar to the American A & P training certification. One training college has enrolled basic training graduates in their pre-employment program[20]. But, these basic training graduates possessed no advantages over other students.

10.5.2. Canadian Aircraft Maintenance Council (CAMC)

The mission of CAMC is to develop a framework for, and to facilitate the implementation of a human resource strategy for the aviation maintenance industry. Its goals are as follows:

- To establish national minimum standards for specified skilled trades
- To facilitate the improved training and retraining programs for all occupations
- To establish ongoing mechanisms for industry-wide human resources planning
- To develop effective recruitment and retention strategies

CAMC has developed its own list of accredited aviation training schools and approved CAMC courses at each of these schools. Some of these schools include industry led training courses. There are currently 9 schools that have CAMC accredited courses and 4 aviation companies with courses. It is expected the list of accredited schools and companies will be expanded by CAMC. It should be noted that CAMC just provides standards and does not regulate. It promotes aviation maintenance as a career.

[20] Interview with Northern Lights College, June 2001

As noted, CAMC has developed national occupational standards for a list of 15-job classifications .The Aircraft Maintenance Technician and Aviation Maintenance Inspectors are two relevant occupations to the AME program. CAMC has also developed a number of training manuals for use by ATOs and others that provide specific course content. These manuals and publications can be purchased from CAMC. In order to attract more young people into the aviation maintenance, CAMC has developed an Aviation Maintenance Orientation Program that is distributed to secondary schools and community colleges. The document acquaints students with the fundamental elements of aviation maintenance as well as to demonstrate the need for applied math and science and to motivate students to acquire generic skills aimed at employment readiness. This orientation document has been very successful and has been used as an introductory course to aviation maintenance and is suitable for distance learning applications.

11. Delivery of Training

The consultants identified five possible models for delivering an AME training program:

- Incorporate Program into an Existing Training Institute
- Develop a Unique and Independent Program
- Distance Education
- Subsidized Pre-employment Training (out of province)
- Status Quo (apprenticeship at Stevenson Aviation Technical College).

Naturally, these five avenues are not mutually exclusive of one another and it is conceivable that a new program could be composed of different aspects of each.

11.1. Incorporate into Existing Training Institute

This option would see an AME training school developed in conjunction with existing Saskatchewan training institutes. In this scenario,an existing polytechnical school would provide the space, instructors and educational infrastructure. The consultants spoke with several training institutes about the possibility of adding an AME training program to their current course offerings and the overall response was positive although many expressed concerns with regards to lack of available classroom and shop space and the difficulty of obtaining qualified instructors. Industry expressed concerns regarding bureaucracy, lack of qualified instructors and delays in implementing the AME program under the provincial post secondary educational system.

11.1.1. SIAST

SIAST is the polytechnical college network with facilities throughout the province to instruct in trades, and technical and scientific training. SIAST has an enrollment of 10,000 full time and 30,000 part time students. It offers more than 200 certificate, diploma and post diploma programs. SIAST offers credit courses through distance learning methods such as correspondence, video and the Internet. It also uses the Saskatchewan Communications Network and is in partnership with eight regional colleges to deliver courses. SIAST provides training at four campuses in Saskatchewan. These are as follows: Wascana (Regina), Palliser (Moose Jaw), Kelsey (Saskatoon), and Woodlands (Prince Albert). These campuses could be used to provide aviation training courses and some shop instruction. An airport location is also needed for aircraft taxiing instruction and engine run ups that must be performed as part of the course. Space will be needed for actual aircraft as well as for other equipment. Officials at SIAST, while interested in aviation training programs, stated that no space was available to house the program in any of their campuses. They also noted that the ability to offer competitive salaries would be a concern in attracting qualified instructors.

SIAST has offered to form a partnership with the aviation industry to develop an AME training program that is operated within the provincial educational system. SIAST would maximize available classroom space and instructional expertise where appropriate to support the program. SIAST also noted their willingness to work with industry in order to make an aviation training school feasible. SIAST officials offered their full cooperation to see an aviation training program succeed.

11.2. Independent Aviation Training Program

The independent aviation training program model is an alternative delivery method. It would have its own facilities and instructors and be located on an airport. The independent model would have the flexibility to change courses to meet industry changes and make decisions quickly. Its overheads should be lower while relying more on contract services. Discussions with other aviation training schools, however, point out that there is likely a minimum size of enrollment given the space and equipment needed. They indicate that a school would have to have at least 60 students enrolled at all times to be financially self supporting for its operational costs alone (excluding capital costs). The other aviation training schools noted that hiring experienced instructors may be difficult since the wages expected by suitable instructor candidates are high. One school recently spent over $10,000 on advertising received 3 responses and the salary level was $64,000. Five years ago they had their choice and salary levels were about $ 50,000. Large airlines and the aviation training schools are seeking the experienced instructor who has teaching and mentoring abilities in addition to aviation instruction. There may also be some difficulty attracting experienced instructors to

Saskatchewan, unless the training institute is in a major city. Changes to CARs 566 by Transport Canada also give the impossibility of one ATO instructor teaching a complete program despite a small class of students. A minimum of two experienced instructors will be needed and likely more if administration and quality assurance issues are to be addressed. Part time or rotational instructors could be hired to complement the faculty's experience base. The independent aviation program would have to have its own administration staff and make arrangements for graduate diplomas and Transport Canada accreditation. It would be difficult for an independent aviation school to succeed without some assistance from the post secondary education system in the province, particularly for administrative support.

11.3. Distance Education

At this point, from the investigations by the consultants and discussions with other aviation training institutes, the distance education delivery model is not seen as a viable option for training AMEs since students lack the hands on approach necessary to learn the requisite skills. It also does not build teamwork relationships needed in the AME training program. However, it is conceivable that distance education could be added later to update the skills of experienced workers and for certain endorsement/type courses. It could, for example, also be used by some of the Bombardier Aerospace technicians who may want to complete gaps in their training for a civil AME license.

Distance learning and night school could have a role in attracting potential AME students to the aircraft maintenance industry. This information would be directed to secondary schools and colleges in the province. The Saskatchewan Aviation Council has purchased the CAMC maintenance orientation course and is now available in five Northern Saskatchewan high schools as a means to allow students to see the career opportunities in aviation maintenance. It is suggested CAMC's aircraft maintenance orientation course (discussed earlier) could be an appropriate program using distance-learning methods. The CAMC course could be used as a preliminary teaching model to ascertain the aptitude and skill level of potential AME students in remote locations. It may be particularly useful for identifying aboriginal students who may have the potential to become AME students. A distance learning type of course would allow them to remain in their community and gain some basic knowledge of the aviation industry before making the decision to leave the community and attend training school. Northlands College, in La Ronge, was contacted by the consultants to discuss distance learning with aboriginal students. They would be interested in providing distance-learning courses (using the Saskatchewan Communications Network) related to aviation training at the college and deliver this program into the communities. Some of the existing aviation training schools have used distance learning but they report mixed results. If

distance learning is to be successful, based on their experience, the course content has to be well constructed with graphic examples. An instructor has to be available online or readily available to answer questions and explain details not covered by text or illustration. The Internet, while making great progress in accessibility and speed, has some limitations as to how information is displayed.

SAIT is an example of an aviation training school that has distance-learning experience. They have delivered correspondence and distance learning for several years. Their experience is that the theory can be taught by electronic means or by correspondence, but the practical instruction is more difficult. Their procedure is to first explain the theory of what to learn and then show how it can be done. Even the theory portion takes time to properly develop. Real- time instruction could be made available, but again, experience shows that few will take advantage of the two-way communication and ask questions of the instructor.

11.4. Subsidized Pre-Employment Training (out of province)

Since projected capital and operating costs for a proposed aviation training school in Saskatchewan are high, especially for only 15-20 students, it may be more cost-effective to pay for Saskatchewan resident's pre-employment training out of province. An alternative is for the province to subsidize the student to attend a pre-employment type aviation training school in another province. What assurances are there that these students would return to Saskatchewan for work? A drawback clause could be written where a graduate must work at least 3 years in Saskatchewan. If, in the event a graduate defaults, they would then pay for their training costs. The table below provides an estimate of the training costs associated with sending students out-of-the province for training.

Figure 21 - Estimated Annual Cost for Pre-Employment Training

	$CDN per class of 20 students (Based on 2 years)	Total $CDN per student (Based on 2 years)
Tuition & Books	199,800	9,990
Housing	180,000	9,000
Food & Local Transportation	144,000	7,200
Totals	523,800	26,190

If the province sent 20 students out of province for pre-employment training, it would cost $523,800 CDN annually. Please note tools are not included in this cost as training colleges can either rent student tools or sell student tools. Students at Confederation College, in Thunder Bay, for example, pay about $9,400 CDN annually for tuition, residence, books, and tools. This does not include food[21]. There is also the travel cost to attend an out-of province school.

11.5. Status Quo (apprenticeship model)

The Saskatchewan Apprenticeship Commission favours the status quo as it is the least costly alternative for the province. They will retain the apprenticeship method as an option regardless of the establishment of a pre-employment model in the province since there are some employers and students who prefer this method. The status quo option of continuing to send apprentices to Stevenson Aviation Technical Institute is seen by some as an attractive option since it costs the Province of Saskatchewan nothing to send apprenticeship students to Manitoba (as noted in section 10.1). About one third of Saskatchewan's AMEs used the apprenticeship model to obtain their qualifications. The Saskatchewan Apprenticeship Commission would like to retain this method for cost considerations. Stevenson, however, is undergoing a change and adding the pre-employment model. This is being done for Air Canada's requirements, since the airline does not support the apprenticeship type model. While Stevenson indicates that it will maintain

[21] Wings magazine, issue 7, 1998

both methods, there is no guarantee that the apprenticeship method will be offered in the long run due to the overhead cost of offering both.

On the other hand, if Saskatchewan does not develop its own aviation training school it may be forfeiting opportunities to allow the Saskatchewan aviation industry to grow. It is estimated that the province is now exporting a significant amount of maintenance work outside the provincial borders due to a lack of maintenance capabilities. Currently, no Saskatchewan organization performs advanced avionics work, or overhauls Pratt & Whitney PT6 turbine engines, one of the most popular engine models.

With better training and type endorsements, the Province of Saskatchewan could recapture about half of this exported maintenance work estimated to be 4.35 million dollars[22]. After spin-offs are calculated, the tax base of the province could be increased by over 6 million dollars per annum. This extra tax revenue could be a good incentive to provide an AME training facility in Saskatchewan, according to the Trimension study.

[22] Trimension Study, June 2000

Table 2 - Summary of Training Delivery Options

	Pros	Cons
Pre – employment model	Preferred by Industry Students complete training before work Used by all community colleges except Stevenson SIAST support available Enhances Saskatchewan aviation industry base	Limited pre-screening done Graduates are more mobile to seek work elsewhere
Apprenticeship model	Saskatchewan already sends candidates to Stevenson No cost to Saskatchewan government Good retention of employees Pre-screening done by employer	Employer must make a four year commitment Limited job readiness in the initial employment period Requires more employer supervision Industry loses work days during annual formal training periods
Subsidized pre – employment (Out of Province)	Saskatchewan government is absolved of any startup duties including curriculum development and Transport Canada approvals No capital costs	Subsidized costs may be as much as or equal to pre-employment operating costs Does little to enhance Saskatchewan aviation industry Requires agreement with student to ensure Saskatchewan retention

12. Cost Estimates

The sub-committee cost estimate assumed that SIAST would administer the program and provide some of the infrastructure

The costs to establish and operate an AME training program were calculated by the consultants. There were two estimates previously developed for the Steering Committee. One was a subcommittee report that used estimate figures based on experience and information from trade publications for equipment and other costs. Capital and operating costs were presented. The other cost estimate came from SIAST, formed by a committee of two, who visited four pre-employment aviation training schools. Costs estimates were obtained and scaled down to the Saskatchewan environment. These earlier cost estimates provided a guide to the consultants. The consultants also discussed cost with the existing aviation training schools and in particular with Northern Lights College in Dawson Creek, British Columbia who have a smaller aviation training school. Equipment and building costs came from equipment suppliers and building contractors. It should be noted that the consultant's cost estimates rest between the other two estimates and provide a medium viewpoint.

12.1. SIAST Budget

SIAST completed its own cost budget in September 2000. They estimated it would cost $1 million for operating costs and $3 million for startup capital costs. The budget was derived from cost estimates provided by the other schools visited and matched to a Saskatchewan environment.. SIAST recognized that the basic infrastructure for a school would be significant and could support up to 60 students due to the basic shop and hangar space needed.

12.2. Sub-committee Report

The subcommittee report did their own cost estimate for an AME training school after the cost budget was submitted by SIAST. The cost estimate is backed up with notes to indicate sources of information and assumptions made for the cost calculations The calculation summary was $350,000 for annual operating costs (includes a building lease) and $570, 000 for startup capital. As noted, it assumed SIAST would administer the program and provide some of the infrastructure. The costs reflected do not include any facility or infrastructure costs which may be apportioned from existing SIAST facilities/programs for that usage.

12.3. Cost Considerations

Several aviation training schools were contacted for their views on expected capital and operating for a proposed AME training program in Saskatchewan. The following is a summary of these discussions. It should be

noted that trade publications quote the average value of donated equipment, to a training program, to represent only 17% of the needed equipment value.

12.3.1. British Columbia Institute of Technology (BCIT), Richmond, B.C.

BCIT operates a large aviation training school on the south side of Vancouver International Airport. The large hangar, classrooms and shops were at one time the headquarters for Canadian Pacific Airlines and later, Pacific Western Airlines. Pacific Western Airlines basically donated the facility to the Province of British Columbia. The facilities are on land leased from the Vancouver International Airport Authority. BCIT now operate 8 different AME training courses and have about 650 students enrolled in the various aviation programs. They have a new intake of 16 students every eight weeks and do not have a summer break. They operate eight semesters; each of which is 4 weeks in length.

In the case of a Saskatchewan AME training program, two instructors are recommended by BCIT. It is not possible to have one person who is competent in all areas of the course, particularly given the recent changes in the regulations and the knowledge base now needed. Even the best and most experienced instructor will not be able to handle more than 70% of the course/program content. Most instructors should be able to handle 50-60% of the courses. There are some, however, who may have the qualification (e.g. AME license, etc) but can teach less than 40% of the courses without a major investment in additional training. Experience is very important in selecting an instructor. Those instructors who have the experience, qualifications and teaching skills are in high demand. At BCIT they are paid $64,000 and with the new contract soon to be negotiated it will be over $70,000 next year. It is suggested that a senior instructor with an M license be hired as the chief instructor and who has in-depth experience in a broad range of applications. This senior instructor should be assigned full time (e.g. 70%+) in instructing. The second person would ideally have an E license, and instruct for about half time. The remainder would be spent on administration and quality assurance. The second person would still be experienced in a wide range of applications but would not have the same in-depth experience level as the senior instructor. BCIT recruits their instructors from the airlines who are taking early retirement and freelance contractors who are between overseas assignments. They also get some from AMOs and Transport Canada.

Equipment donations do not come readily in the initial years of a training school. Based on BCIT's experience, most of the equipment donations have been initiated by former students who are now in management positions with larger companies. This type of relationship requires pati ce.

The best place to get equipment is in the United States, according to BCIT.. There are auctions and other sales where equipment is sold off at 10c on the dollar. BCIT recently acquired 10 Rolls Royce Spey jet engines in California for $10,000 each, some still in crates with brand new parts. It should be noted that US dollars add a premium when buying the equipment, but the amount and cost is much lower than Canadian sources. It takes experience, however, to make good purchases of surplus equipment.

Student supplies are getting expensive. A budget of $7/day/student is in place at BCIT but since tuition has been held down, this figure should be raised 30-40%. At present, students use consumables such as lock wire, cotter pins, and bolts, etc as they require. BCIT will likely kit supplies for students in the future with an appropriate number in each kit that an average student will likely require. If they go over the kit amount, this will be a signal to see how the student uses the materials and whether they have learned the process correctly. The consumable parts kit would represent about 16 weeks of supplies and would cost each student $200-300. This would be in addition to the issued safety kit (shares, safety goggles, etc.).

Training material is expensive. The BCIT's Training Control Manual cost more than $25,000 to write. CAMC course material was another $40,000. BCIT used Transport Canada Airworthiness #566 (free) and CAMC requirements to develop its own course outline that crosschecks BCIT's program to both #566 and CAMC references for course instruction. These in turn, were used to develop two additional instructor manuals for every course.

It took BCIT about 256 weeks of manpower to develop the manuals for 64 weeks of instruction, or over $420,000.

BCIT also has had to develop their own Quality Assurance (QA) program since they are now getting large and have recently hired a QA instructor.

With regard to operating costs, BCIT estimates it costs $1000/student/month. A class of 16, therefore, has operating costs of about $196,000. This figure does not include any fixed overheads for rental, utilities, etc. These are allocated to BCIT main campus in Burnaby. It does include a portion of administration costs that can be allocated. It does not include the equipment or student supplied costs.

It is expensive to establish and operate a maintenance training school; particularly the up-front costs. BCIT indicates that it can establish 8 classes for the same cost as one class due to the fixed overhead costs being so high.

12.3.2. Buffalo School of Aviation, Yellowknife, Northwest Territories

Northern Lights College started an AME training program in Yellowknife in the Territories two years ago and these associated costs may be relevant to a proposed training school in Saskatchewan. The college, in cooperation with the Territorial Government and Buffalo Airways, a local operator who has the water bombing contract with the government; established a joint venture. The Buffalo Airways course was held in Yellowknife at Buffalo Airways hangar facilities. There were 3 instructors assigned to the course and others were rotated in and out as required. It cost between $700,000 - 800,000 to operate the program for the first year (for a course for about 20 people). This does not include capital costs. It was assumed equipment donations (from the local operators) would meet some of the capital requirements, but this never occurred. Buffalo Airways felt the first year's costs were too high and decided to obtain its own ATO in order to save costs. Although the school, went through a turbulent period the school has been restructured and it is still a certified ATO.

The chief Instructor died which delayed the instruction program. Transport Canada stepped in and helped with the transition to the re-structured school. They added 300 more hours to the training course.

There were 12 students in the first class and 11 graduated. They have 16 in this year's class. The new Fall term has 15 registrants already and they expect at least two more.

Buffalo School of Aviation is private and this has presented some problems. They can't issue tax receipts, for example. They now have established a relationship with Aurora College who provide administrative support. The Territorial Government is also providing financial support. Tuition revenues, alone, do not cover operational costs.

Instructors are difficult to obtain. An ATO has to pay $60,000 a year for experienced people. There is also a premium on top of this salary range to attract instructors to Yellowknife.

In addition to the Chief Instructor, there are two other instructors. On some of the "hands on" instructions, the student/instructor ratio is reduced to 8:1. There are some procedures that will require two instructors to demonstrate the techniques.

The Chief Instructor, in his first year, spent 70% of his time instructing but it was impossible to keep up with the paper work and the QA issues. This year he is reducing his instructing time down to 10% of his time. He suggests that in the first two years of a new school, there is a heavy demand on

administration and QA. The school did not have the administrative support and the school suffered.

Transport Canada told them they needed 3 instructors to keep their ATO. They have a national audit team coming in August 2001 and the Chief Instructor expects that there will be further issues to address. He knows he does not have the equipment for M2 instruction and suggests that no school can afford to have the type of equipment that will comply with CARS 566 (ie. Boeing 737).

In terms of the cost to establish and operate an aviation training school, Wade concurred that approximately $1.8 million in capital and $710,000 in annual operating costs could be expected. Buffalo School of Aviation reduced their capital costs by using Great Slave Helicopters and Buffalo Airways fleet aircraft for instruction. While this reduced the capital cost, scheduling conflicts arise when aircraft are available for instruction. There also exists some conflicts between students and those working on the shop floor. Buffalo Airways provides the classroom and hangar space, and therefore there is no rent/lease payments for a building.

Pre-employment is the preferred model. Northern operators do not want their employees leaving for formal training each year. They want to hire them after they have finished their AME training. Buffalo School of Aviation will continue to admit 32 students total (16 in each year). Later, an E program may be introduced. A large demand for training exists for the sub-trades people. There are no training courses for stores clerks, ramp attendants, refuellers, technical record keepers, and cargo loadmasters. These people have learned while on the job. The school is developing an introductory program on aviation as well as training program for these sub-trades (for employers). Buffalo Airways, alone, has a turnover of 30-40 people a year in these sub-trades. Some go on to become pilots and mechanics. The Territorial Government will financially support training for these sub-trades. Graduates of the program are employed mainly by Buffalo Airways, Great Slave Helicopters, and First Air.

12.3.3. SAIT, Calgary Alberta

SAIT class size is 20 to 30, but in the labs and shops, class size is down sized 15 students. The number of instructors for a class of 15 is likely two; if both are well qualified. There may be a need for three instructors, if the first two lack some qualifications.

It was commented that program establishment costs are difficult to determine. It depends on the assumptions as to building, equipment, etc. It is well over $1.0 million for capital needs, but under $4.0 - 5.0 million.

And, equipment donations have helped, but it takes time to build up enough donated equipment. In a startup-training program, it is better to assume that everything must be purchased.

SAIT currently has an enrollment of about 120 in each year of their two year AME training program. A major expansion is scheduled to take place at SAIT which involves re-locating the aviation training programs to the airport. This expansion plan is based on Air Canada's plans to re-open a Boeing 737 maintenance line at Calgary Airport requiring 350 additional employees.

12.3.4. Northern Lights College, Dawson Creek B.C

Northern Lights College currently has three classes of AME students with 17 in each class. Classes start every 5 months and each semester is 10 months with a two-month break. In the past few years they have added equipment and capabilities in composite repairs, electronics and non-destructive inspection (NDI). They have also introduced human factors training.

Northern Lights has six instructors and one department head. They estimated a class of 15 would require two instructors if no administration duties are assigned. Northern Lights reduces its instructor loads and costs by having welding and computer courses taught by other divisions of the College.

Northern Lights noted that it would take the same infrastructure for an enrollment of 60 as it would for a class of 15. Operating costs can be scaled down but there are still fixed operating costs that cannot be avoided despite the smaller size. This factor was mentioned by other training institutes also.

Equipment donations do help with the capital cost but it takes time to build up sufficient training equipment. The school may receive a lot of repetitive parts that can't be readily used. Some donated equipment is not useful, but occasionally a "real gem" of equipment is donated.

12.4. Space Estimate

Table 1 - Space Estimates

	SIAST	McNeal & Assoc

12.4. Space Estimate

Table 3 - Space Estimates

	SIAST Ft²	McNeal & Assoc. Ft²
Hangar space	6000	8000
Classrooms	1700	1700
Paint Shop	500	200[23]
Sheet metal shop	900	0[24]
Engine shop	1000	0[25]
Engine test cell (explosion proof)	1000	300
Composite shop	700	700
Avionics lab	700	700
Computer lab	700	0
Electrical lab	700	0
Technical library	1400	500
Student lounge	600	400
Office space	900	500
Restrooms	300	300
Tool crib	500	500
Parts storage	300	600
spmc and mech. Facilities	600	400
TOTALS	18500	14800

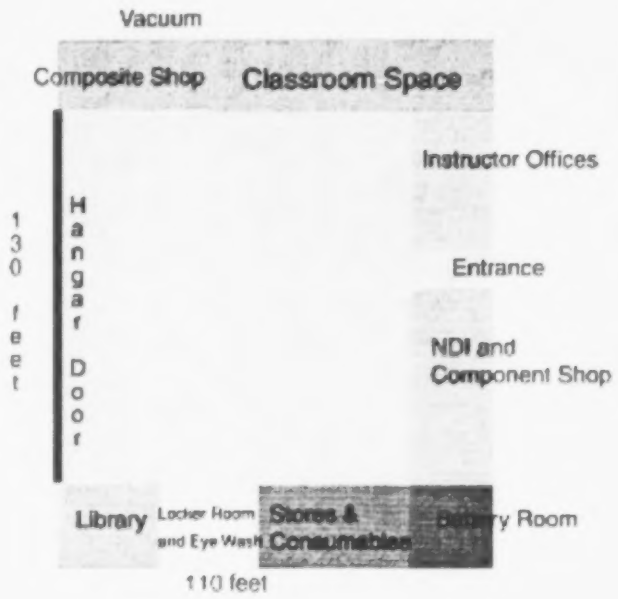


Figure 22 - diagram of a typical school

The table above is an estimate of the space required for an AME training facility. This estimate can be compared to the SIAST space estimate[26]. . Areas such as the hangar, engine shop, avionics lab, and other shops require a minimum square footage regardless of a small class size. Items such as classrooms, locker rooms, libraries, and office space can be sized for a smaller small class size as proposed in this study. It is assumed that a computer lab, an electrical lab, and a welding shop would be accomodated in space to be made available at a SIAST campus.

[23] Paint Shop booth located in hangar space
[24] Sheet metal shop located on hangar floor
[25] Engine shop located on hangar floor
[26] SIAST report, September 2000

12.5. Training Delivery Costs

These are estimates for capital and operating costs. Five sources are listed here. These include: the SIAST report of September 2000, the sub-committee report, and information from interviews with BCIT, Northern Lights and Stevenson College. The consultants prepared their own estimate that recognizes all sources and pertinent documents. Since much of the cost information is proprietary to training colleges, gaps in the above table do exist. However, all of the training colleges estimated annual operating costs.

Please refer to a complete methodology in Appendix I.

Table 4 - Capital and Operating Cost Estimates

	SIAST ($000's)	Sub-Committee ($000's)	BCIT ($000's)	Northern Lights ($000's)	Stevenson ($000's)	McNeal & Ass. ($000's)
Capital Costs						
Renovation Cost	1000					300
Aircraft	1000	420	750		1000	650
Engines	500					400
Components & Systems						50
Aircraft System Training Boards	300			0		50
Curriculum Purchase			200	125		40
Tools	250	150				200
Training Manuals			200			125
TOTAL	3050	570	N/A	N/A	1000	1815
Ongoing Costs						
Number of instructors	4	3	2	3		2
Salary and wages cost	400	250	140	195		168
Other Staff						
Part time technician						25
Part time stores clerk						0
Clerical support						25
Consumables	35		25			32
Capital amortization	300					180[27]
Utilities / plant maintenance[28]	70					23
Program Development						155
Facilities lease[29]	225	100				101
TOTAL	1030	350	588	750	550	709

[27] This is dependent on stakeholder commitments. This estimate assumes none.
[28] Includes utilities, insurance, janitorial services, and security
[29] Includes ground lease, property taxes, management, and repair & maintenance

12.6. New Construction Costs

Another option rather than renovating an existing hangar, not available or suitable, is to build a new hangar or engage a developer in building a hangar that can be leased back.

Option 1: Build a new hangar

This cost estimate was achieved through a phone interview with InterLox Building Systems of Vancouver.

Table 5 - New Building Construction Costs

	Foundation	Building	Finishing	Door
$ ft²	$8[30]	$18[31]	$60[32]	
Ft²	15,000	15,000	5,000	
Total	$120,000	$270,000	$300,000	$150,000[33]

Total: $840,000.00

Option 2: Engage a developer

Lockhart Management Services of Saskatoon furnished this cost estimate. It assumes 5,000 ft2 of finished area and 10,000 ft2 of unfinished area for a hangar area. This is a turn-key building leased on a long term arrangement. This lease cost estimate is likely typical of a turn-key developer.

Table 6 - New Building Lease Costs

	Finished	Unfinished
$ ft² (lease rate)	9.50	6.75
$ ft² (operating costs)	5.00	3.00
Ft²	5,000	10,000
$ per annum	72,500	97,500
Total	$170,000	

[30] This assumes a solvent collection system is installed.
[31] This could increase to $20 per sq. foot if an engine test cell has to be explosion proof.
[32] This is the top price for a door system. This would purchase a 72-foot wide door with three partitions capable of admitting a Twin Otter size aircraft.
[33] This is the top price for a door system. This would purchase a 72-foot wide door with three partitions capable of admitting a Twin Otter The finishing costs are included only for those areas that need to be finished such as classrooms.

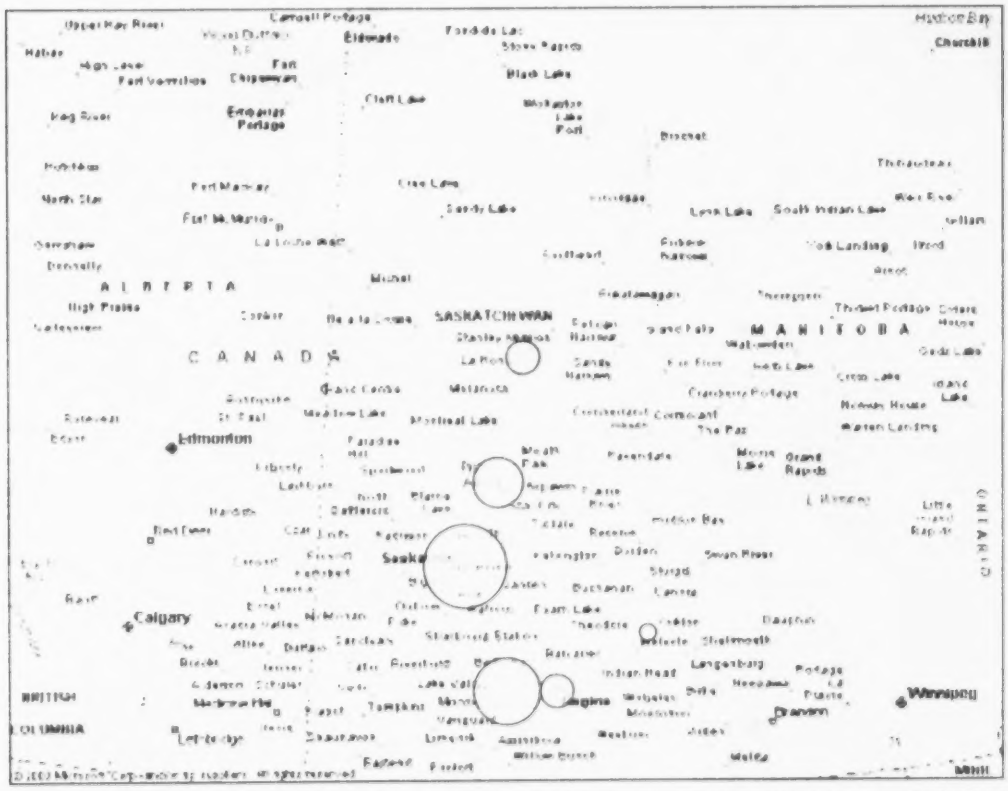
13. Location

The consultants looked at a variety of locations to base an AME training program. The study Terms of Reference listed four possible locations for an aviation training school: Moose Jaw, Regina, Prince Albert and Saskatoon. In assessing these locations, special attention was paid to:

- Proximity to potential AME candidates
- Aviation industry proximity
- Building/hangar options
-
- Available on-airport sites
- SIAST and other college facilities
- Aboriginal Access

Figure 24 – Map representing number of Saskatchewan AMEs/Technicians

Source: Transport Canada



With regard to selecting a suitable location for the potential AME training school, the consultants were requested by the Steering Committee at the Stakeholders workshop to approach the various cities for additional information on suitable building options, costs and possible concessions. A Request for Information (RFI) was developed by the consultants and sent to the respective REDAs (Regional Economic Development Authorities) in each city. The REDAs were asked to coordinate submission proposals with the city, airport authority and interested building owners and property developers. Submissions were received from all four cities with the information requested. Costs were requested to be included in the respective proposals. It should be noted that not all the REDAs submitted full packages due to various circumstances. The consultants reviewed the various submissions and summarized the information and compared and ranked the data with each of the submissions. A copy of the RFI is included in Appendix IX.

The consultants fully recognize that the proposed location for an AME training school is a contentious issue. Each city wants to be selected as the location for such a school. The consultants assessed the information and developed their own location criteria. The selection is based on the consultants' own interpretation of the information and does not necessarily reflect the views of the Steering Committee. At the Stakeholders' Meeting a consensus could not be arrived at with respect to a location.

The following subsections summarize the location information.

13.1. Moose Jaw

Moose Jaw is located in the Southwest corner of the province of Saskatchewan. Located 71 km West of the provincial capital, Regina, Moose Jaw has a population of 34,160. In the past, agriculture and the Department of National Defense played a large part in Moose Jaw's industry. Now, military flight training and neutraceuticals have arrived as industry players.

Currently, the City of Moose Jaw and the Regional Economic Development Authority (REDA) have contracted Calibre Consultants to examine possible spin-offs from the NATO Flight Training Concept (NFTC), operated by Bombardier Aerospace in cooperation with the Canadian Armed Forces. Possible spin-offs could include such programs as flight traffic control training and NATO maintenance training as well as other transportation training.

The City of Moose Jaw has been very successful in starting community-public-private partnerships. This is evidenced by:

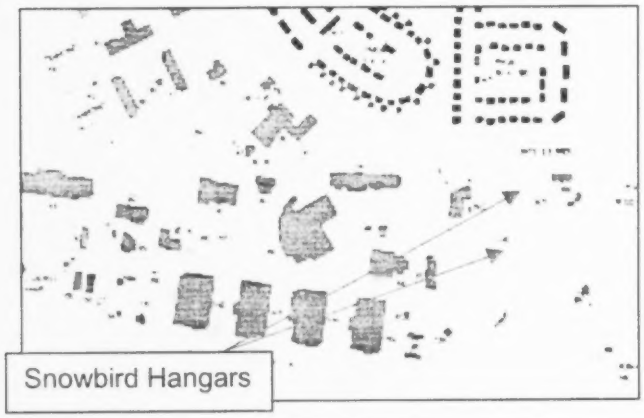
- The NFTC
- The expanding neutraceutical industry
- A mineral spa in downtown Moose Jaw

13.1.1. Industry proximity

Besides the NFTC and Provincial Airways based at the Moose Jaw Municipal Airport, Moose Jaw does not have any other large flight organizations in the locale. There are limited civil aviation opportunities at present. NFTC has 100 ex-military technicians on staff. Many of these are interested in civil conversion training to obtain an AME license.

13.1.2. Building options

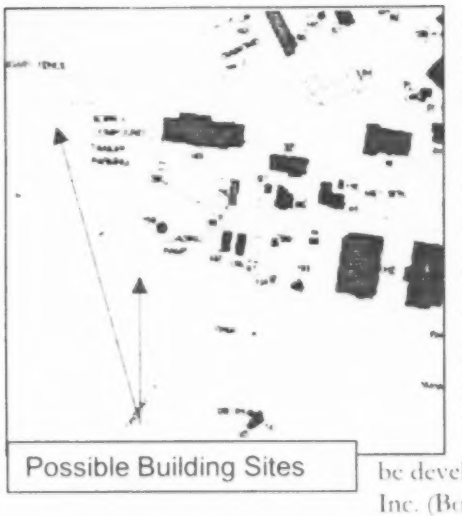
Figure 25 - Map 1 of Moose Jaw NFTC



A hangar currently occupied by the Canadian Snowbird team may be vacated within the next two years. This space would be sufficient to operate an AME training program, however extensive renovations would be required to bring the hangar up to fire code requirements.

The 15th Wing Commander, has stated that no available hangar exists that matches the proposed training facility characteristics. However two possible building sites at Moose Jaw NFTC exist. These are: west of building 143 and southwest of building 132 as noted in Figure 27.

Figure 28 - Possible-building sites



This land would be leased from DND (Department of National Defense), and be subject to taxes. However, the City of Moose Jaw has offered tax abatements of 100% in Year 1 decreased to 20% in Year 5. The City of Moose Jaw has also offered to construct a building and then lease it back to the AME training program on a 15 year lease. The lease would be at market value with the possibility of a lease phase in[34].

The Director General, Realty Policy and Plans, DND, in a letter dated July 26, 2001, conveyed DND's support "in principal" for the construction and operation of an AME school at CFB Moose Jaw. A land use arrangement could be developed. The subject lands are under license to MILIT-AIR Inc. (Bombardier Aerospace). Policy issues will have to be addressed, but the Director General does not see insurmountable problems that cannot be resolved.

[34] In a letter from the Mayor Al Schwinghamer, dated July 31, 2001

13.2. Prince Albert

Prince Albert is located in central Saskatchewan. To the South of the City lies a primarily agricultural region; and to the North is the province's northern forests, lakes, and mining and sport fishing opportunities. The population of Prince Albert is 39,307. The airport at Prince Albert has the lowest operating costs of any locations discussed. This includes terminal fees, parking, and the ground lease. Property taxes are the second lowest of any locations discussed.

13.2.1. Industry proximity

Prince Albert is home to a moderate array of flight operators and maintenance organizations. Transwest houses their main base in Prince Albert as well as Elite Aero. There is also a RCMP air detachment with a Caravan aircraft at the airport. It is important to note that Prince Albert also acts as a "gateway to the North". In Northern Saskatchewan, many air operators serve fishing camps, and small settlements. La Ronge, to the North of Prince Albert, is an important air center as well.

13.2.2. Building options

The Prince Albert Airport is owned and operated by the City. There is serviced land available at the airport for 11 cents/ft^2, not including property taxes. The ground lease for the smallest available lot would be $7,194 per annum. There is no available hangar space currently available.

While the City has not yet proposed a turnkey facility for the airport, there are local developers who may be interested in constructing a suitable facility if a long-term tenant such as a training school would be the occupant of the building.

There are two available lots to the west of PA Aviation that have access to Taxi B at Prince Albert Airport. The lot adjacent to PA Aviation is 325 ft. X 203 ft. and there are two additional lots southeast of the Transwest hangar. The larger of these two is a concrete pad from a former hangar. This lot is 396 x 277 ft. and has airside access to the main apron.

Figure 29 - Map of Prince Albert Airport

13.2.3. Other Considerations

Prince Albert is recognized as a center for aboriginal and Metis people. The First Nation Grand Council has already established a native flying school at Prince Albert.

13.3. Regina

Some 200,000 people call Regina, the provincial capital, home. Regina is located in the south central portion of Saskatchewan. Many amenities grace Regina such as a university, parks, a symphony, and government services.

13.3.1. Industry Proximity

The Regina Airport hosts a moderate number of flight operators and maintenance organizations. Agricultural air operators (such as Sky North), flight training operators (such as the Regina Flying Club), and governmental agencies (such as Saskatchewan Property Management and the R.C.M.P.) are located at the airport.

13.3.2. Building options

Figure 30 - Map of Regina Airport

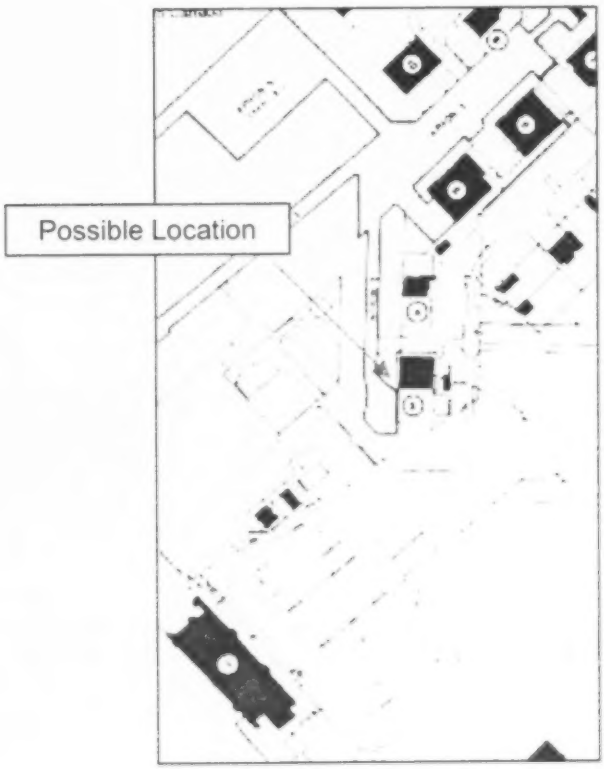


Figure 31 - Photo of Regina Hangar

A 12,000 ft^2 hangar, at the airport isa possible site. It is currently occupied by Saskatchewan Air Transportation, but the government transportation service wishes to relocate creating a potential vacancy. It is the first aviation building built in Saskatchewan that lends some heritage value. But, the side offices have a mold problem. The ground lease rate is $6,960/ annum or 15.8 cents / ft^2. This current ground lease expires Dec 31/ 2001.

The Regina Airport Authority is also willing to construct a new building and then operate a turnkey lease arrangement with the aviation training school. The terms would be negotiated at market rates on a long term lease of 15 years or more. The airport is close to the knowledge corridor (University of Regina, SIAST, and Saskatchewan Indian Federated College- SIFC).

Saskatchewan Property Mgt.
Building Dimensions
Total Land – 44,000 ft^2
Total Building Space – 12,000 ft^2

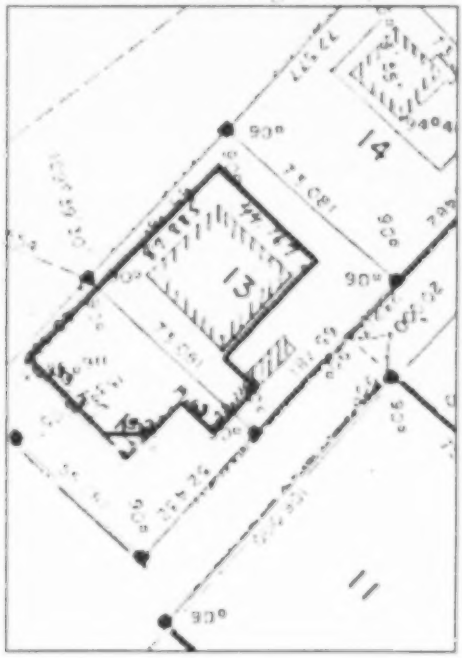


Figure 32 - Map of Possible Regina Hangar

13.3.3. Other Considerations

According to the 1996 census, Regina has 13,330 persons of aboriginal descent. This is the second largest population in Saskatchewan. Both the Saskatchewan Indian Federated College (SIFC), which has been called Canada's foremost First Nation controlled university college, and the Gabriel Dumont Institute of Native Studies (GDI) are located in Regina. SIFC has more than 1,300 students. Both these institutes have expressed interest in the AME training program.

Besides these two colleges, the airport location is located close to the knowledge corridor where the University of Regina and SIAST are both located. Regina is also home to innovative research facilities.

13.4. Saskatoon

Saskatoon, a city of 231,000, is central to most of Saskatchewan's population. Saskatoon is also located in the heart of the agricultural industry. According to the Place Rated Almanac for 2000, Saskatoon is rated the 15th "Best Small Metro Area" in North America and first in Canada.

13.4.1. Industry Proximity

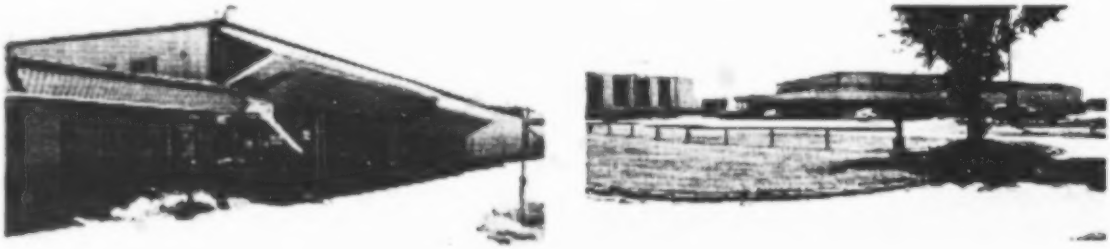
Saskatoon has the largest concentration of aviation activities in the province and industry proximity is excellent. Many organizations such as charter operators, flying schools and maintenance firms are located at the Diefenbaker Airport. Currently, the airport sees 15,400 seats per week flying to and from the city making it the busiest in the Province. And, Saskatoon employs more than one third of the province's AMEs.

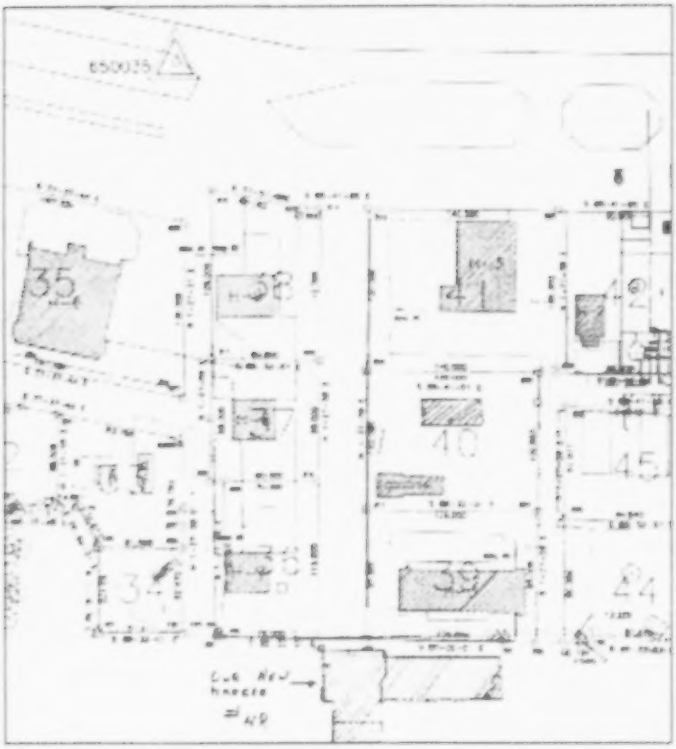
13.4.2. Building Options

There are several possible building options at the Saskatoon Airport. Some of these are:

Hundseth Construction, owns a condominium hangar complex at Saskatoon Airpark. This complex was built in 1985. Sufficient parking space exists. There are four interconnected hangars totaling 12,000 ft^2. The asking rent and operating costs total $81,600 per annum. There is also 4100 ft^2 of classroom / office space available for $6.00/ ft^2/month. Heat, electricity, and GST are not included in any of these costs.

Figure 33 – Hangar Complex 39 owned by Hundseth





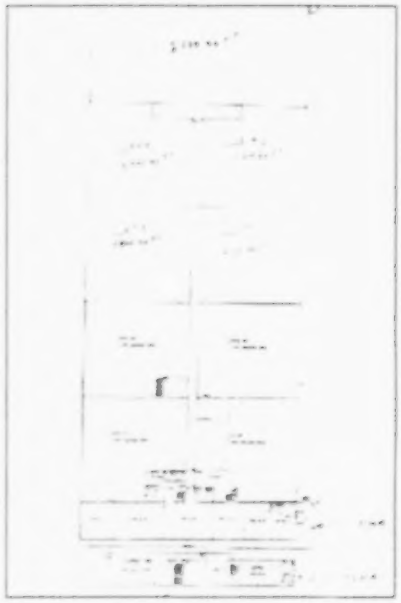


Figure 34: Map of Hangar

Figure 35: Diefenbaker Airport map showing Hangar 39

The cost of serviced land at Saskatoon Airport is $2.00/m2 (21c/sq ft).

Another possible location was Hangar #6, which Air Canada Regional uses for F-28 maintenance. There was a local developer who would be interested in renovating the building if there were an anchor tenant such as a training school. But, Air Canada Regional recently announced that it will continue to maintain the F-28s at this base to at least December 2002.

An expression of interest to build a new hanger/office complex facility was submitted by Lockhart Management Services Inc. Lot 27 at the Saskatoon Airport is a prime location on the hanger line with excellent ground-side and air-side access. The company can accommodate building a larger facility with other tenants (approximately 20,000 sq. ft.) or a smaller facility that will accommodate only the facility (approximately 12,000 sq. ft.). Based on the first scenario, the lease rates are detailed in Table 5 –New Building Costs. The hangar could be operational within 8-10 months, and an interim hangar and office space could be arranged for immediate use while the construction is being completed.

Central Aircraft currently owns a hanger (Hangar 7) with office space that potentially could be used as a training facility. The building is a 27 year old steel structure with a 60' x 15' steel door. It has 8,000 square feet of working space and the office is an additional 2,800 square feet. The major monthly costs of Airport Authority lease, property tax and heating costs in the winter amount to approximately $3,900. The property also allows additional space to build onto the facility and more parking is

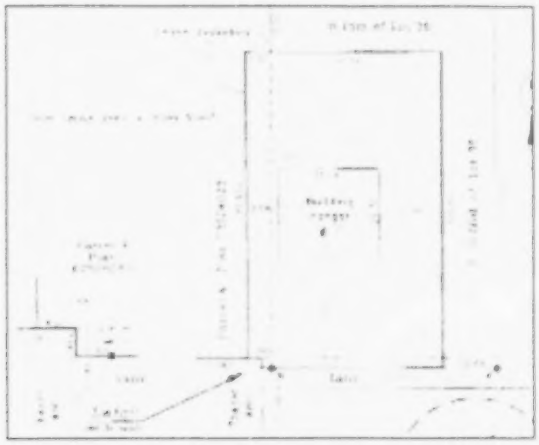


Figure 36 - Diagram of Central Aircraft Maintenance Hangar

available. The fact that there is already an Approved Maintenance Organization in the building may be an asset in terms of easing start up for a training school. This building is available for sale. .

One location off the airport is the Koyl building. The building is located adjacent to the airport an airport access can be made to connect with the property.

The Koyl Building is located at 2610 Koyl Avenue and was once the home of Promavia's plane manufacturing plant. The total land area is 3.3 acres. 7269 square feet was built in the 1950s and an additional 27,440 square feet was added in 1974. There is a second floor available on the original building and the ceilings on the addition are 17.5 feet high. The present owners are willing to bring this building up to code requirements and there is plenty of room for expansion and for an apron area. The owners are also willing to subdivide the building and renovate to the tenants requirements. Lease on this building is approximately $4 per square foot plus $1.90 for operating costs.

Figure 37 - 2610 Koyl Avenue

Saskatoon Airport is owned and operated by the Saskatoon Airport Authority with a head lease with Transport Canada. There is available vacant land at the airport as well as several options for taking over existing facilities. There do also exist tenants who may sublease or have leases that will soon expire.

The Saskatoon Airport Authority would be prepared to consider offering certain amenities to make establishing a training school attractive. It can arrange for a developer to build a purpose building on several available parcels of land. In addition, as long as there is a long-term tenant arrangement the Authority could provide direct or indirect concessions.

13.5. Location Summary

Ground Lease Rates – Prince Albert had ground lease costs of only $0.11/ft^2. Regina has rates of $.16/ft^2. And, Saskatoon has a rate of $.21/ft^2. For Moose, this data is not available. The difference in these rates is negligible to the success of the program

Availability of Hangar Space – Saskatoon has several existing options. Regina has one hangar available but it may not be available for some time. Moose Jaw could have facility space available, although it is officially documented that no such space currently exists. Prince Albert has no available hangar space

Cost to Renovate an Existing Hangar – In Saskatoon, the hangars are fairly new and generally match facility requirements. Both the Regina and Moose Jaw facilities would require expensive renovations to bring the buildings up to fire and building code standards. Prince Albert has no exisiting facilities, so cost would increase to accommodate a new building.

Aboriginal Access –Please refer to section 9.3, Aboriginal Access. It should be noted that although Prince Albert has a smaller aboriginal population than Regina, Prince Albert is a "gateway" for a much larger Northern aboriginal population. There is already an aboriginal flight training school in Prince Albert.

Spin-Off Capabilities – At Moose Jaw, plans are underway to develop other capabilities such as NATO maintenance training and flight controller training. There is also the possibility that Moose Jaw could become a civilian conversion center for military technicians who wish to obtain AME training prior to retiring from the Canadian Armed Forces. Saskatoon has a joint flight school recently established on an industry/government partnership. This flight school could be a role model for a proposed AME training school. Prince Albert has an aboriginal flight training school.

Property Taxes –Although tax differences are negligible to the success of the program, the tax concessions and existing taxes for each city will be detailed. Although Moose Jaw had no property tax data available for CFB Moose Jaw, their proposed tax abatement structure was the most attractive. And, although Saskatoon's proposed tax abatement structure was similar to Moose Jaw's, their current tax rate was 3 to 4 times that of the others. Prince Albert offered no tax incentives, but their tax rate is already low. Regina did not commit to tax incentives, but negotiations are possible at a later date.

Industry Funding – One corporation, Bombardier Aerospace in Moose Jaw, has made a written commitment to the program and one other operator in

La Ronge expressed interest in a cash donation to the program[35]. Also, the Prince Albert Grand Council, headquartered in Prince Albert, is interested in funding a training school if aboriginal access is provided. It should be noted that the Prince Albert Grand Council is impartial to the location. Saskatoon, while no funding has been committed by the local aviation industry at this time, is a potential source of industry funds.

13.6. Summary of Response from City Groups

Table 7 – Responses from City Groups

	Existing Space	Property Tax Concessions	Possible new development	Other
Moose Jaw	None (only site)	100% in first year, declining 20% annually until year 5.	Yes, at market rates	
Prince Albert	None (only site)	None	Yes, at market rates	Low Ground Lease Rate
Regina	One location	Possible through negotiation	Yes, at market rates	
Saskatoon	Three locations	50% in year 1, declining 10% annually until year 5	Yes, at market rates	

[35] Determined by the McNeal & Associates survey of June 2001

14. Stakeholder's Workshop

A workshop was held in Saskatoon on July 5, 2001 to assess the feasibility of an AME training program in the Province of Saskatchewan. In attendance were members of the Saskatchewan Aviation Council's AME training Steering Committee as well as other stakeholders. The purpose of the Stake holders' Workshop was to review the consultants preliminary report on the feasibility of an AME training program and to provide input and direction to the feasibility study's final conclusions and recommendations. The workshop also provided an opportunity to discuss the stakeholders' commitments to the proposed AME training program and the level of commitment in terms of funding.

The results of the Stakeholders' Workshop were used to complete the feasibility study with regard to conclusions and recommendations. It also provided input and guidance to the development of a subsequent business case document.

The consultants presented the findings of the preliminary report at the workshop. Questions were asked by the stakeholders during the presentations to query information and data sources used in the study. Suggestions were made by the stakeholders as to additional sources of information and factors to consider in determining the feasibility of AME training in the province.

The consultants' presentation of findings included:

- Demand for AMEs and training requirements
- Alternative training delivery approaches
- Costs to establish and operate an AME training institute
- Suitable locations for a training institute

Each of the sections of the feasibility study were discussed in-depth by the stakeholders. A consensus was reached on all the issues except for the best location for a training institute and the level of commitment expected from the stakeholders. These were the two of the most contentious issues to address at the meeting.

The following are the key results of the Stakeholders' Workshop:

1)Demand

- There is sufficient demand for additional AMEs in the province both for retirement replacements and future growth of the aviation industry
- It is expected that 15-20 students a year will attend an aviation training program leading to an AME license
- Initial demand is for a basic M1 license but there are opportunities for expansion of training in the future for M2, S and E licenses as well as for endorsement training
- **An AME training program for Saskatchewan candidates should proceed**

2) Training Delivery

- **The preferred model is the pre-employment type of training**
- The Saskatchewan Apprenticeship Commission will continue to provide apprentice type training
- **SIAST will be the preferred alternative to administer and deliver the necessary AME training program**
- **SIAST provided a commitment to assist the establishment and operation of a training program despite instructor, classroom space and other limitations**
- An alternative to provide subsidized pre-employment training at out-of-province institutions should be considered as a training delivery alternative
- Consideration should be included as to military conversion training in addition to the Bombardier technician training for civil licenses
- Aboriginal access is an important source of AME candidates and should be recognized

3) Costs

- **It was noted that fixed infrastructure costs for a suitable hangar space, shops and classroom were considerable**
- **The expected capital cost for facilities, equipment, etc is $1.8 million**
- **Annual operating costs are estimated to be $710,000**
- Donations from industry for equipment average only about 17% of the total equipment cost.
- It takes several years to achieve sizeable donations of equipment
- **Instructors are one of the largest cost elements. Skilled instructors are in demand and salary ranges of $65 - 70,000 per annum can be expected for an experienced instructor.**

- A minimum of two instructors will be needed for a class of 15-20 students due to the complex training instructions and the need for "hands on" training and mentoring of students

4) Location

- **An on airport site is required since aircraft taxing and engine runups are course needs**
- Some courses such as computer instruction, welding, etc. can be done at other institutions, if required
- **Four cities were examined as possible locations: Regina, Moose Jaw, Saskatoon and Prince Albert, as per the study Terms of Reference.**
- There are suitable airport sites at each of the locations to either renovate an existing hangar/building or to construct a purpose-built facility
- **A decision as to a location was not made at the Stakeholders' Workshop. The consultants were instructed to invite proposals from each of the four cities to offer suitable facilities for a AME training school. Requests for Information (RFI) were directed at the Regional Economic Development Authorities (REDA) in each city to coordinate their respective offers.**
- **The RFI should also ask for facility cost information as well as any concessions the cities may offer to an AME training institute if located in their community.**

5) Interest and Level of Commitment

There is strong interest from the Saskatchewan aviation industry in an AME training program. The survey conducted by the consultants clearly demonstrated the need for trained AMEs and a commitment from the industry to support such a training program. The Stakeholders' Workshop also re-iterated the industry's interest in developing an AME training program.

The level of industry commitment, however, is mainly to hire graduates of the AME training program, to provide donations of equipment and to assist an Advisory Board with their time and experience. Few offered financial assistance. Bombardier Aerospace, who had expressed possible financial support, was not in attendance at the stakeholders' workshop due to other commitments. However, the Vice President of Aviation Training for the Corporation did fax a letter outlining Bombardier Aerospace's continual support for an AME training program. The letter did not provide an actual amount of financial commitment for an AME training program.

6) Business Case

The stakeholders instructed the consultants to proceed with a business case. In the business case, possible sources of funding were to be identified as well as a financial model as to funding structure was to be included. The financial model would provide a guide to the level of funding commitment needed. The business case would also include an implementation schedule noting important milestones to be achieved prior to establishing an AME training institute.

15. Business Case

A business case was developed for establishing and operating an AME training institute in the Province of Saskatchewan. The focus of the business case is an assessment of the costs associated with an aviation training school and the possible sources of revenues to cover these anticipated costs. A financial model is used to examine the funding options. The business case also provides an implementation plan as a guide to the Steering Committee. It presents major milestone events which need to be addressed prior to establishing an aviation training program.

15.1. Feasibility Summary

The feasibility study is extensively used to develop the business case. The main findings of the feasibility are summarized as a brief introduction to the business case: demand, training delivery, costs, and location.

Demand- There is a demand from potential students as almost all the training colleges across Canada have waiting lists. Currently Saskatchewan sends 17 –22 students out of province for apprenticeship training. There is also a demand for potential graduates. The survey results indicated that 20 apprentices could be hired yearly, and over 50 new AMEs will be needed (in Saskatchewan) in the next five years.

Training Delivery- The pre-employment model is the preferred option for the potential AME training school. The training delivery should be administered by SIAST. SIAST would be responsible for the development of the program, building / hangar acquisition, building maintenance delivery of training and Transport Canada certification of the program. The M1 license is the preferred scope of training. Other avenues such as international students, military students, and distance learning should be explored at a later date. The program should accommodate 15 –20 students and two instructors. One of the instructors will have extensive experience and the ability of teach more than 70% of the course load. The second instructor will assume quality assurance and administration duties as well as instruction. The curriculum should be purchased from CAMC.

Costs- The estimated capital costs for an AME training program will approximate $1.8 million. This assumes that an existing hangar can be renovated for $300,000. And, it also assumes a building size of 15,000 ft^2 on a land base of 44,000 ft^2. If a new building is required either the operating costs (on a lease basis) or the capital costs (on a purchase basis) may rise. Annual operating costs will be $710,000; including lease or amortization costs. Instructor salaries represent a large portion of these ongoing costs. These

annual operating costs will be a major ongoing cost consideration. The operating cost estimate does not include the cost of inflation which will undoubtedly affect the ongoing costs of the school.

15.2. Sources of Funding

Student tuition fees, alone, will not cover the costs of an aviation training school. Even a class size of 60 students will not generate sufficient revenue to offset the annual operating costs. Other sources of funds will have to be found. What are these possible funding sources?

1. Federal Government

The Federal Government could be a major source of funding, particularly for capital costs for the training school.

Western Economic Development Canada (WED) provided a significant financial contribution to Red River College/Stevenson Aviation Technical College for the building of their new aviation training school in Winnipeg. WED is a co-sponsor of the AME training feasibility study and is a supporter of projects that enhance the development of Western Canada.

Indian and Northern Affairs Canada (INAC) is another possible source of funds if aboriginal access is developed for aboriginal students to participate in an AME training school. The development of support, however, would likely be through the economic development role of a Tribal Council.

Transport Canada (TC) is not a normal government funding agency but could be a possible donor of training equipment, manuals and other items.

Human Resources Development Canada (HRDC) works closely with industry, industry associations and the unions for the development of skills in the Canadian labour forces. HRDC does find initiatives related to training and skills up-grading in the aviation industry.

National Defense (DND) is another possible federal government source for assistance, particularly if CFB Moose Jaw is selected as the location. DND could be a possible donor of buildings/hangar and land in conjunction with the NFTC program. It could also provide surplus equipment for training purposes to the aviation training school.

2) Provincial Government

The Province of Saskatchewan is interested in an AME training institute and is a co-sponsor of the funding for the feasibility study.

There are several provincial government agencies which may be possible sources of funding. Some of these include:

Saskatchewan Post-Secondary Education and Skills Training (PSEST) - the most likely provincial government organization to provide funding for an AME training school. It could provide both capital and operating funds. PSEST is responsible for colleges and universities in the province including polytechnical schools. PSEST would likely be the coordinator of provincial government funding for an AME training school.

Saskatchewan Institute of Applied Science and Technology (SIAST) is the provincial polytechnical institute with campuses located in Regina, Moose Jaw, Saskatoon and Prince Albert. SIAST, itself is likely not a direct funding agency but is a possible source of classroom and lab space for computer training, welding and other courses associated with AME training. Some equipment may also be made available by SIAST. SIAST would also provide development of the program, training delivery, certification and other assistance. An AME training school would be administered by SIAST, including employment of instructors.

Saskatchewan Environmental Resource Management (SERM) is the provincial government agency which operates the Saskatchewan Air Services Division, including the water bombing operations located in La Ronge. SERM is on the AME training program Steering Committee and is very interested in the establishment of a training school. SERM is one of the largest employers of AMEs and technicians in the province and it needs additional trained people. SERM is a possible donor of aircraft equipment to be used as teaching aids at the proposed school.

Saskatchewan Apprenticeship and Trade Certification Commission now administers the AME apprentice program and currently sends students to Stevenson Aviation College in Portage La Prairie (Southport), Manitoba. The Commission is likely not a direct funding agency for the proposed school but could provide coordination to avoid overlaps between the existing Apprenticeship program and the Pre-Employment training to be provided by the proposed AME training school.

3) Municipal Governments

Each of the four cities: Regina, Moose Jaw, Saskatoon and Prince Albert is interested in an AME training school and want it to be located in their respective community. The cities in conjunction with Regional Economic Development authorities (REDAs), airport authorities, building owners and property developers provided submission to the consultants. These submissions outlined the possible concessions that could be offered to an

aviation training school. These concessions include lower property taxes, lower municipal service costs, turn-key building/hangar development and other features to attract a training school. The type and value of these concessions will have to be negotiated.

4) Prince Albert Grand Council

The Prince Albert Grand Council is a possible source of funding for an AME training school. The Grand Council is interested in the project as a means to increase aboriginal access to skills training.

The Prince Albert Grand Council plans to operate its own airline in Northern Saskatchewan. It has already established a flying training school for pilots in Prince Albert. A maintenance training school where aboriginal students could obtain the necessary AME training is an important part of the Grand Council's plans for a northern airline.

The Prince Albert Grand Council would consider funding for an AME training school as well as providing financial support for aboriginal students. The funding could be both for capital and operating costs. The economic development office of the Grand Council would most likely obtain funding in concert with the FSIN.

The Federation of Saskatchewan Indian Nations (FSIN) represents all Tribal Councils (or Grand Councils) and independent First Nations. And, the Prince Albert Grand Council represents First Nations in central and northern Saskatchewan.

5) Bombardier Aerospace

Bombardier Aerospace has offered to support an AME training program in the province. In a letter dated June 29, 2001 from the Vice-President, Aviation Training, Bombardier pledged the following:

- Willingness, through the NFTC program at 15 Wing, to participate in a student Co-op program;
- Provide employment opportunities during normal seminar break period
- Willingness to offer full time employment to graduates of the program
- Best efforts in engaging suppliers to provide donations of equipment and aircraft components
- Bombardier will be supportive of any requests for use of 15 Wing facilities presently under license to Bombardier, consistent with the needs of the NFTC program

The letter does not quantify the amount of the financial commitment to the AME training school. Bombardier does indicate that it is committed to supporting a business case designed to positively influence provincial decisions makers.

6) Aviation Industry

The Saskatchewan aviation industry fully supports the establishment of an AME training school in the province. Several companies are represented on the AME training program Steering Committee.

The consultant's survey of the industry indicated that most companies would hire graduates of an AME training program, act as advisors to a training school and provide donations of equipment which could be used as training aids. Few companies, offered to provide direct funding. However, it is expected that once the commitment to proceed with a training school and funding is provided by government, the aviation industry can be expected to contribute its share towards the program. The Saskatchewan Aviation Council could be the co-ordinator of these industry funding contributions. One of the suggestions was that the aviation industry establish a sizeable trust fund to provide training scholarships.

15.3. Financial Model (Example)

The consultants developed a simple financial model to illustrate a possible funding structure. The financial model (example) shows the level of financial commitment required for capital and operating costs of an AME training school.

The costs were discussed in an earlier subsection as were the sources of possible funds. The capital costs, identified in the feasibility study, are estimated to be $1,825,000. The annual operating costs are $710,000; including lease / amortization costs for a building / hangar complex.

The funds needed to meet the expected costs were allocated to each of the possible funding sources. The allocation is arbitrary, but it is based upon similar funding models for joint government / industry sponsored projects such as the Red River College / Stevenson Aviation Technical School in Winnipeg, Manitoba. The actual percentage amounts will likely vary.

Table 7 shows an example of a financial model.

Table 8 - Proposed Funding Structure

Funding Group	Capital $	%	Operating $	%
Federal Government	1,000,000	55	30,000	4
Provincial Government	400,000	22	450,000	63
Municipal Government	25,000	1	5,000	4
Sub-total	1,425,000	78	485,000	70
Grand Council	100,000	5	50,000	7
Bombardier Aerospace	200,000	11	50,000	7
Aviation Industry	100,000	6	50,000	7
Student Tuition	N/A		75,000	10
Sub-total	400,000	22	225,000	30
Grand Total	1,825,000	100	710,000	100

The financial model indicates that the non-government sources of funding (ie. Aviation Industry) would be responsible for 22% of the capital funds. In the case of the annual operating funds, the non-government funding sources would be responsible for about 30% of the funds.

15.4. Implementation Plan

The consultants developed an implementation plan for the establishment for an aviation training school. The implementation plan is a guide for the Steering Committee as to the major tasks needed to be accomplished.

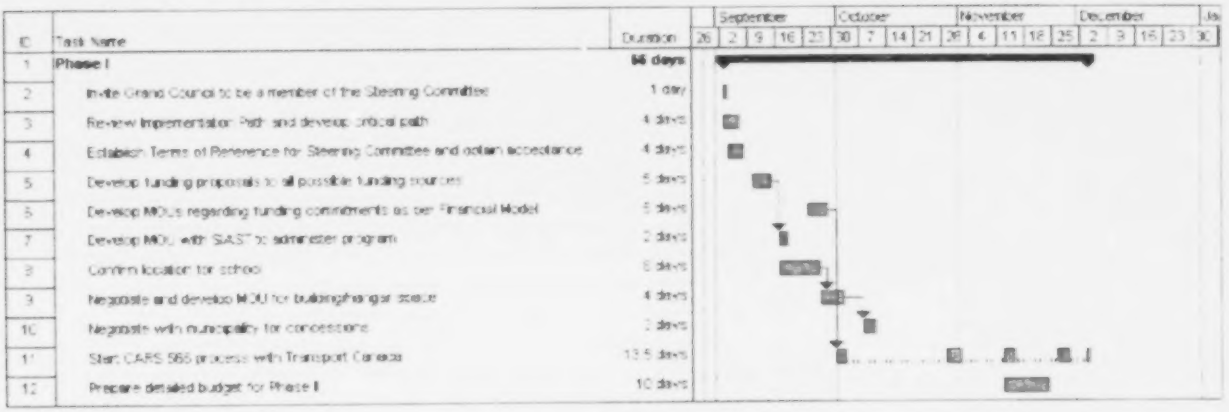
The Implementation Plan has been divided into three phases for project management control. These phases are:

- Phase I – Obtain Funding Commitments
- Phase II – Negotiations and Agreements
- Phase III- Construction and Program Development

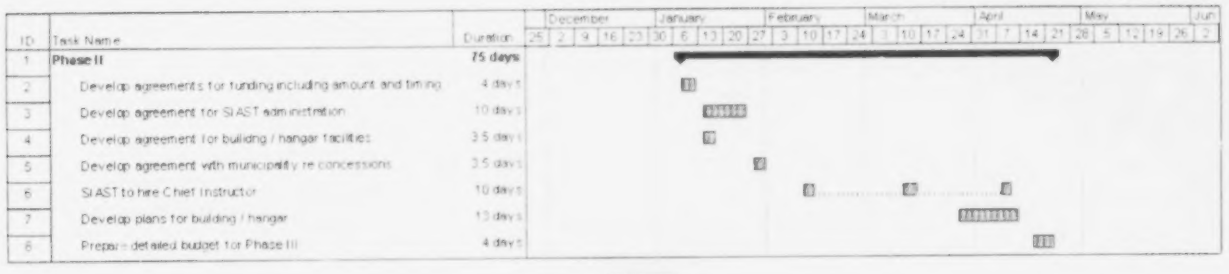
It is assumed that the Implementation Plan begins in September, 2001 and is completed with the opening of the AME training facility in January 2003.

Figure 38 presents a milestone schedule. It lists the major tasks and their time duration.

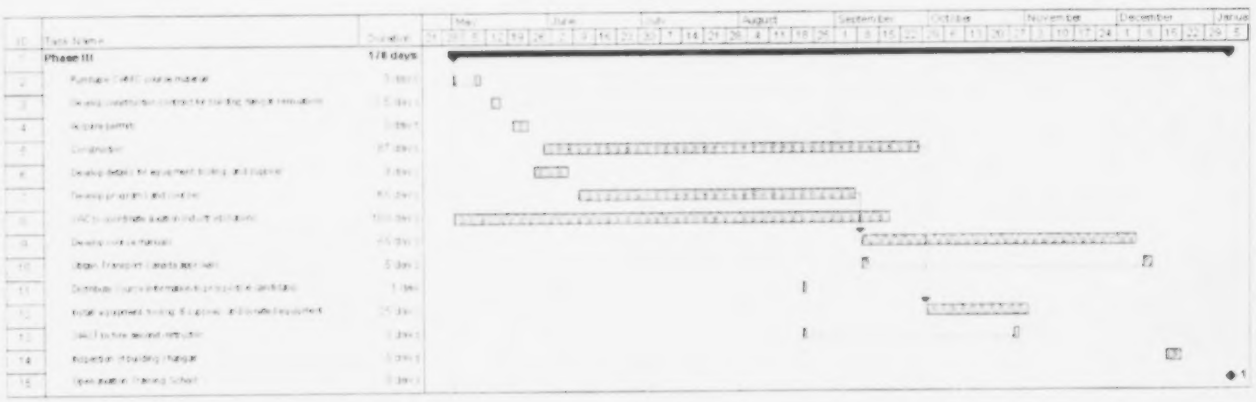
Figure 38 - MileStone Schedule



ID	Task Name	Duration
1	**Phase I**	**86 days**
2	Invite Grand Council to be a member of the Steering Committee	1 day
3	Review Implementation Path and develop critical path	4 days
4	Establish Terms of Reference for Steering Committee and obtain acceptance	4 days
5	Develop funding proposals to all possible funding sources	5 days
6	Develop MOUs regarding funding commitments as per Financial Model	5 days
7	Develop MOU with SIAST to administer program	2 days
8	Confirm location for school	5 days
9	Negotiate and develop MOU for building/hangar space	4 days
10	Negotiate with municipality for concessions	2 days
11	Start CARS 565 process with Transport Canada	13.5 days
12	Prepare detailed budget for Phase II	10 days



ID	Task Name	Duration
1	**Phase II**	**75 days**
2	Develop agreements for funding including amount and timing	4 days
3	Develop agreement for SIAST administration	10 days
4	Develop agreement for building / hangar facilities	3.5 days
5	Develop agreement with municipality re concessions	3.5 days
6	SIAST to hire Chief Instructor	10 days
7	Develop plans for building / hangar	13 days
8	Prepare detailed budget for Phase III	4 days



ID	Task Name	Duration
1	**Phase III**	**178 days**

Appendices

I. Cost Methodology

	McNeal & Ass. ($000's)
Capital Costs	
Renovation Cost	300
Aircraft	650
Engines	400
Components & Systems	50
Aircraft System Training Boards	50
Curriculum Purchase	40
Tools	200
Training Manuals	125
TOTAL	1825
Ongoing Costs	
Faculty (how many instructors)	2
Total cost	168
Other Staff	
One part time technician	25
Part time stores clerk	0
Clerical support	25
Consumables	32
Capital amortization	180[36]
Utilities / plant maintenance[37]	23
Program Development	155
Facilities lease[38]	101
TOTAL	709

1. Assumes limited fire code upgrades, and explosion proofing only the engine test cell. Assumes a solvent collection system already exists.

2. System training boards include avionics boards and propulsion structure boards.

3. Based on an estimate of what CAMC would sell the basic curriculum for. Program development includes upgrades to the curriculum.

4. Tools include: sheet metal benders and cutters, a vacuum system for composites, a cylinder honer, a magniflux, jigs, a microshaver, a band saw, a drill press, and a sander. Assumes equipment is all used

5. Salaries are $70,000 and additional benefits equal 20% of the salary.

6. Based on BCIT's budget of $7 per student per day. As this budget is set to increase, the estimate is $10 per day per student.

7. See below

8. Includes improvements to the curriculum, training guides, and manuals

9. Based on the Saskatoon proposal. Assumes 14,500 ft^2, of which 2,000 ft^2 is finished space

Utilities, Plant Maintenance	$CDN per annum	
Janitorial Services	11,000	Based on the Regina Proposal
Insurance	1,200	Based on the Saskatoon Proposal
Security	1,800	
Utilities	8,000	Based on an average between the Regina and Saskatoon Proposal
Supplies	1,000	Based on the Regina Proposal

[36] This is dependent on stakeholder commitments. This estimate assumes none.
[37] Includes utilities, insurance, janitorial services, and security
[38] Includes ground lease, property taxes, management, and repair & maintenance

II. Stakeholder List

Name	Organization	Phone No.	Email
Janet Keim	Mitchinson Flying Service (Chair)	244-6714	mitchinson@sk.sympatico.ca
Gladys Hill	PSEST	787-1404	gladys.hill@sasked.gov.sk.ca
Bob Guthrie	Apprenticeship and Trade Commission	787-2093	bob.guthrie@sasked.gov.sk.ca
Doug Muir	Apprenticeship and Trade Commission	787-2093	dmuir@sasked.gov.sk.ca
Paul Omilon	Saskatchewan Economic and Cooperative Development	787-0924	paul.omilon@ecd.gov.sk.ca
Arnold Boldt	SIAST	694-3280	boldta@siast.sk.ca
Rick Pawliw	PSEST	787-5984	rick.pawliw@sasked.gov.sk.ca
Art Vandale	Bombardier	694-2222 ext. 2733	art.vandale@nftc.com
Ron Cochrane	Elite Aero	922-2877	elite.aero.ltd@sk.sympatico.ca
Don Bradshaw	Transport Canada	975-6906	bradshd@tc.gc.ca
Col. Bruce McQuade	DND	694-2821	bruce.mcquade@nftc.com
Garry Sturgeon	WED	975-5874	garry.sturgeon@wed.gc.ca
Roger Schindelka	SIIT	477-9211	shindelkar@siit.sk.ca
Rex Milne	Transwest	764-1404	rexmilne@transwestair.com
Dallas Hanson	Northern Air Operations, SERM	425-4586	drenaud@serm.gov.sk.ca
Ernie Beauliua	West Wind Aviation	668-0214	ebeauliua@westwindaviation.ca
Claude Naud	SIAST	933-6374	naudd@siast.sk.ca
Gerlinde Sarkar	SIAST	933-7716	sarkar@siast.sk.ca

III. City Contacts

Contact Name	Organization	Phone No.	Email
Marty Klyne	Regina REDA	1-800-886-5644	mklyne@rreda.com
Brian Hamblin	Moose Jaw City, City Mgr.	694-4427	bhamblin@city.moose-jaw.sk.ca
Al Schwinghamer	Moose Jaw City, Mayor	694-4422	aschwinghamer@city.moose-jaw.sk.ca
James Leir	Moose Jaw REDA	693-7332	
Dale Botting	Saskatoon REDA, CEO	664-0723	dbotting@sreda.com
Dana Armstrong	Saskatoon REDA, Co-ordinator	664-728	darmstrong@sreda.com
Perry Trusty	Prince Albert, Co-ordinator	953-4300	

IV. AMO / Operator Survey List

Personal Interview Or Visit	Company	Reply	Contact		Phone No
Yes	1 Advance Aviation				
	2 Anderson Aviation Ltd.		Erwin Anderson		306 384-4884
	3 Battlefords Air		Fran de Kock	will return	445-3099
	4 Blue Sky Air Ltd.		Nat Ooms		634-9390
	5 Border City Aviation ltd.				
	6 Buffalo Narrows Airways Ltd.				
	7 Canadian Digital Photographics Inc.				
Yes	8 Air Canada Regional		Harley Strudwick	left voice msg	665-4000
	9 CAVOK Flight School				653-4651
	10 Central Aircraft Maintenance		R.D. Tomlinson		653-0070
	11 Champion Air Park		Douglas Reetz		634-6611
	12 Champion Air Park		David Dube		668-3000
	13 Courtesy Air		Scott Singleton		235-4377
	14 Cree Lake Air Inc.		Gary Lynchuck		955-1407
PV	15 Dunbar Airmotive Ltd.			will return	779-0076
PV	16 Elite Aero		Ron Cochrane		922-2877
Yes	17 Falcon Air Services		C.L. Hundseth		931-0010
	18 Greenland Fertilizers Ltd.				
	19 Heli-Lift International Inc.				783-5438
	20 Highland Helicopters			wrong no.	
	21 Ile a La Crosse Airways Ltd.			no answer	833-2151
	22 La Loche Airways Ltd.			refaxed	
	23 La Ronge Aviation Services				
	24 Leading Edge Aviation Ltd.		Donald Ingham		783-0321
	25 Mac Air Services				
	26 McBain Aviation Ltd.				
PV	27 Millenium Aviation		Cecil Sorenson	will return	384-4230
PV	28 Mitchinson Flying Service		J. Keim		244-6714
	29 National Aviation Centre		Jeff Weeks		764-4077
PV	30 NATO Flying Training Canada		Art Vandale		
	31 Nimbus Aerobatics Ltd.			wrong address	
	32 Nipawin Flight Centre		Harold Yung	left voice msg	862-4451
	33 North American Airlines				790-8660
	34 North Central Helicopters Ltd.		Rod Fisher		425-3100
	35 Northern Air Operators		Dennis Renaud		425 4586
	36 Northern Avionics				
	37 Northern Dene Airways Ltd.		Dave Webster		
	38 Northwestern Helicopter Ltd.		Leonard Peterson	refaxed	469-4599
	39 Osimas Helicopters Ltd.				
Yes	40 Osprey Wings Ltd.		Allison	refaxed	635-2112
	41 Pierceland Aeromotive				
	42 Points North Air Services Ltd.		Andy Eikel		633-2138
	43 Points North freight forwarding				
	44 Prairie Flying Service		L.G. Merkel		569-3700
	45 Pro-Flight Ltd.		Rich Wilde	same as above	585-1855
	46 Pro-Flight Training Ltd.			same as above	

	47 Provincial Airways	Bill Nyman		692-7335
PV	48 RCMP		will return	780-5461
Yes	49 Regina Flying Club	Tom Ray		525-6194
	50 Reid Aero Ltd.			
	51 Rotary Air Force Marketing Inc.			
	52 Royco			789-0747
Yes	53 Sask. Property Management Corp.	Dave Wilson		
	54 Saskatchewan Air Transportation Services		same as above	
PV	55 Saskatoon Aircraft Rebuilders Ltd.	Sura	should return	934-5005
	56 Saskatoon Avionics Ltd.			
	57 Scientific Instrumentation Ltd.			
	58 SED Systems Inc.			
PV	59 SERM, Northern Air Operations		save as 35	
PV	60 Skynorth Aviation	Norm Calhoun		522-5050
	61 SOS Avionics			
	62 South Central Air Services			
Yes	63 Southern Aviation Ltd.	Duncan Morris		
	64 Star Helicopters Ltd.			
	65 Sunrise Aviation Co. Inc.	John Erikson		634-5558
	66 Swift Current Flying Services Ltd.		wrong address	
PV	67 TC Aviation Inc.	Tom Coates	should return	
	68 Terminal Systems International			
	69 Tisdale Aero Center Ltd.			
Yes	70 Transwest Air	Rex Milne(DOM)		764-1404
	71 Transwest Air	Rex Milne(DOM)		665-2700
	72 Ultrasky Flight Centre			
Yes	73 West Wind Aviation	Ernie Beauliua		668-0214
	74 West-Can Inspection			757-2286
Yes	75 Yorkton Aircraft Service Ltd.	Cheryl Denesowych		786-7840

V. Personal Visit List

Name	Relation to project
Andy Cole	Northern Lights College
Arnold Boldt	SIAST
Art Vandale	NFTC
Bob Guthrie	Apprenticeship Commission
Brian Hamblin	City of Moose Jaw
Bruce	SkyNorth Aviation
Cecil Sorenson	Millenium Aviation
Col. Bruce McQuade	15th Wing, Moose Jaw
Dave Mitchell	BCIT
Dave Wilson	Saskatchewan Air Transportation Services
Dick Rendek	Regina Airport Authority
Don Bradshaw	Transport Canada
Doug Muir	Apprenticeship Commission
Duncan Morris	Southern Aviation
Ernie Beauliua	West Wind Aviation
Gladys Hill	PSEST
Grant Short	Northern Lights College
Harley Strudwick	Air Canada Regional
Janet Keim	Mitchinson Flying Service
Lucie Cousineau	Edouard Mont-Petit (ENA)
Mayor Schwinghammer	City of Moose Jaw
Rex Milne	Transwest
Ron Cochrane	Elite Aero
Steve Burchi	Regina Airport Authority
Sura	Saskatoon Aircraft Rebuilders
Tom Coates	TC Aviation
Maj.Gord Danylchuk	Canadian Armed Forces, Winnipeg

VI. Phone Contact List

Name	Phone No.	Relation to Project
Allison, Gary Thompson	635-2112	Osprey Wings
Anne Ballantyne	931-9641	Calibre Consultants (Moose Jaw spin-off study)
Bill Restal	975-6463	Saskatoon Airport Manager
Bill Van Meppelin	425-4383	Apprenticeship Training Committee
Cecil Hundseth	931-0010	Falcon Air Services
Cheryl Denesowych	786-7007	Yorkton Air
Claude Naud	933-6374	SIAST
Clyde	(604) 588-6541	InterLox Building Systems
Dale Kingstraa	(250) 782-5251	Northern Lights College
Denis Renaud	425-4586	SERM (Northern Air Operations)
Dennis Doersam	(204) 428-6308	Stevenson Aviation Technical College
Doug Lockhart	242-0088	SAC
Keith Labrett	(604) 666-3761	Transport Canada
Larry Fladager	953-7080	SIAST, Prince Albert director
Len Blackmore	(403) 284-7018	SAIT (Calgary)
Paul Omilon	787-0924	SECD
Peter Mayotte	425-4309	Northlands College
Pierre Beaudet	(450) 476-4972	Bombardier, Program Director
Rod Fisher	425-3100	North Central Helicopters
Ron Liebrecht	953-4965	Prince Albert Airport Authority
Ted Devong	922-0099	First Nations Grand Council
Wade Redmond	(867) 920-4496	Buffalo School of Aviation
Zev Rosenzweig	(450) 476-4972	Bombardier, V.P. Aviation Training

VII. Bombardier Aerospace Employee Questionnaire

1. Do you hold a Transport Canada AME license?

   Yes ❑ No ❑

2. Do you hold any other civil authority license, eg. FAA, JAA?

   Yes ❑ No ❑

3. Did you receive your aircraft maintenance training in the Canadian Air Forces?

   Yes ❑ No ❑ (please explain)

   _____

   _____

4. What job classification do you have with Bombardier Aerospace? (Please explain)

   _____

   _____

   Would you be interested in attending an AME training program in the future?

   Yes ❑ No ❑ (Please explain)

   _____

   _____

5. If yes, when would you likely start the training?

   In 1-2 years ❑

   In 5 years ❑

   In 5 - 10 years ❑

6. What type of AME training program would you likely is interested in?

   Full Time Training ❑

   Adult Night training ❑

   Long Distance Training ❑

Other (please explain)

_____

7. Are there other maintenance training courses you may be interested in taking, e.g. endorsement, avionics, structures, etc.?

   Yes ❑ (please explain)

   _____

   No ❑

8. Which location would you prefer for training? Please rank your choice, using 1- 5, with #1 being first preference.

   Regina ☐
   Saskatoon ☐
   Prince Albert ☐
   Moose Jaw ☐
   Other (please specify) ☐

   _____

9. Would you be prepared to fund your own tuition?

   Yes _____ No _____ (please explain)

   _____

10. If your AME training were to be subsidized (by an employer or other agency) would you be interested?

    Yes _____ No _____ (please explain)

    _____

Please provide any other comments or viewpoints which you feel would assist us in determining the feasibility of an AME training program in Saskatchewan.

Name _____

Phone _____

Email _____

Fax _____

- **Should you have any questions, contact McNeal & Associates (604) 273-8471.**
- **Please return completed questionnaire to Art Vandale, Manager, NFTC Program**

VIII. AMO / Operator Survey Questionnaire

1. What type of aviation organization is your firm?

- ❑ Scheduled air carrier
- ❑ Charter air carrier
- ❑ Flying training
- ❑ Specialty air carrier
- ❑ Other (please specify) _____

2. Do you do any of your aircraft maintenance in-house?

❑ Yes ❑ NO

If no, who does your maintenance?

Name	Address	Phone
_____	_____	_____
_____	_____	_____
_____	_____	_____

3. Is your company a Transport Canada (CAR 573) Appoved Maintenance Organization (AMO)?

Yes ☐ NO ☐

4. If No, do you plan to become an AMO in the near future?

Yes ☐ NO ☐

5. If you do your own aircraft maintenance, how many people do you employ?

AME	Full time	☐	Part time	☐
Apprentice	Full time	☐	Part time	☐
Other (please specify)	Full time	☐	Part time	☐

6. Do you plan to add maintenance personnel in the near future? If yes, how many?

	2001	2002	2003
AME addition	_____	_____	_____
Apprentice addition	_____	_____	_____
Other Addition	_____	_____	_____

7. **At which Trans Canada (CAR 566) Approved maintenance Training (AMO) schools did your maintenance personnel receive their training and how many?**

- ❑ Stevenson Aviation Training Centre _____
- ❑ Southern Alberta Aerospace Institute of Technology (SAIT) _____
- ❑ Northern Alberta Institute of Technology(NAIT) _____
- ❑ British Columbia Institute of Technology(BCIT) _____
- ❑ Northern Lights College _____
- ❑ Other (please specify)_____

8. **Based on your experience do you have any preference for one ATO over another?**

- ❑ NO
- ❑ Yes (Please explain) _____

_____

9. **Would a Saskatchewan-based AME training program be of interest to your firm**

- ❑ Yes
- ❑ No (please explain) _____

_____

10. **If yes, what type of support would your company provide?**

- ❑ Hire graduates from the Saskatchewan program
- ❑ Provide financial contributions to establish and maintain an AME training program
- ❑ Donate training aircraft and equipment
- ❑ Volunteer to become an advisory committee member
- ❑ Other (please explain) _____

11. **Would you be interested in other training programs (e.g. structures, avionics endorsement) being offered in Saskatchewan.**

- ❑ Yes
- ❑ NO

If yes, what types of training would interest your firm?

12. **What is your preference for an AME training location? Regina, Saskatoon, Prince Albert, or Moose Jaw?**

_____

Or **other** (Please specify) _____

Please provide any other comments or viewpoints which you feel would assist us in determining the feasibility of an AME training program in Saskatchewan.

Contact

Name

Organization

Phone **Fax**

Email **Date**

Thank You Very Much For Your Assistance.

IX. Request for Information

Request for Information From Regional Economic Development Authorities

For An

Aircraft Maintenance Engineer Training Facility in Saskatchewan

Building Facilities Submission

Date Due July 16, 2001

Prepared by McNeal & Associates Consultants Ltd.
500-4440 Stark Street
Richmond, BC
Phone: (604) 273-8471
Fax: (604) 273-8496
July 8, 2001
waynemcneal@cs.com

Request for Information

Background

Of the 11, 569 licensed and active Aircraft Maintenance Engineers (AMEs) in Canada, only 228 are currently employed in Saskatchewan. This is one of the lowest provincial number of AMEs in Canada. According to the recent study, as a result of the AME shortage, about 4.35 million dollars of aircraft maintenance work is currently sent out of the province annually because it cannot be performed by Saskatchewan Approved Maintenance Organizations (AMOs).

Currently, there are no training opportunities for Saskatchewan workers to train to become certified AMEs without leaving the province.

McNeal & Associates Consultants Ltd., aviation management consultants, were retained by the Saskatchewan Aviation Council (SAC) to conduct a feasibility study to determine if there is suffient demand to establish and operate an AME training program in the Province of Saskatchewan A Steering Committee has been formed with representative of the federal and provincial governments, educational institutes and aviation industry. The Steering Committee met on July5, 2001 to review the consultan't draft report and based on the report's findings, they have decided to proceed with the project. The next step is to determine a location and the building facilities needed for the training school. There are four locations in consideration. These include: Regina, Moose Jaw, Saskatoon and Prince Albert.

The purpose of this Request for Information is to solicite responses from the Regional Economic Development Authoriy (REDA) in coordination with the city and airport authorities in each of the four respective locations, to provide information on new or exixting building facilities and their costs that may be suitable for a proposed new training institute.

Project Vision

It is envisioned that by January 2002 that an aviation training school will open at one of the four short- listed locations. The first class of 15 to 18 students and their instructors would begin a two year pre-employment program leading to a Transport Canada approved Aircraft Maintenance Engineer. As demand increases additional classes will be added. A facility that meets Transport Canada standards for an Approved Training Organization is needed.

The total land area sought is about 30,000 ft2 and must be on an airport with suitable apron and taxi access to the runway system. There has to adequate room for automobile parking as well as for aircraft engine run- up and aircraft taxiing on the apron area. Ideally, there should be suitable adjacent land should the aviation training school need to expand in the future.

A building that incorporates hangar space for accommodating training aircraft is needed as well as space for shop instruction, class rooms, student activity /locker room and a small office-adminstration for the instructors. It must meet building and fire code standards for an educational/Instructional facility.

The desired building space of the proposed training facility would be 15,000 ft2 to 18,000 ft2 . The hangar space should be 11,000 ft2 to 12,000ft2 and the shops and classrooms an additional 4,000ft2 to 6,000 ft2.

Objective

At the Steering Committee meeting on July 5, 2001, it was determined that more input was needed from the various REDA, city and airport authorities on building facility options before proceeding to any final location recommendations. A location analysis was begun on four shortlisted locations. These include:

- Moose Jaw
- Regina
- Saskatoon
- Prince Albert

To complete the location analysis, the consultants were requested by the Steering Committee to request specific information from each respective REDA, coordinated with the city and the local airport authority as to suitable new or existing buildings at each of the respective airports. In the case of a new building it should be available for occupancy by January 2002.

The Steering Committee also requested that the consultants obtain the best price quote for purchase or long-term lease of the proposed facility including capital and operating concessions, which may be offered by the respective communities to have such an aviation training school

Request for Information

Please refer to the Project Vision (Sec 1.1.2) when considering a submission for this Request for Information.

Site and Building Information

The consultants visited airports at each of the locations and examined possible site locations. These locations were summarized in the draft report presented to the steering committee. However, the consultants are requesting REDAs to present their best site location(s) at an airport. There can be more than one option. The consultants have, in their possession, maps of the airports, so simple references will do. Any electronic images or photos sent by mail would be appreciated. Please include all pertinent information such as:

- Property taxes on the property and proposed building
- Ground lease per annum and length of ground lease
- Overall dimensions of property
- Size of building, noting hangar area
- Age of building
- Availability of shop, classroom and office space
- Type and size of hangar door
- Adjacent land for possible expansion
- Details of utilities and services
- Annual lease cost or purchase price
- Length of lease (if lease proposed)
- Expected annual operating costs
- Expected leasehold improvement or renovation costs
- Available occupancy date
- Concessions

Please provide any capital and/or operating cost concessions to be provided by the community as part of the submission.

The Consultants recognize that this request is a large undertaking in a relatively short time for all groups involved. Please do not hesitate to contact

the consultants should you require further information or clarification of this Request for Information.

Regan McNeal, Project Manager, phone: (604) 273-8471 (office), (604) 782-4404 (cellular), fax :(604) 273-8496 or an email at waynemcneal@cs.com.

Delivery Date

Due to time constraints to submit a business case to the various government authorities for budget requirements to establish the aviation training school, time is of the essence. We would like to have your response to the Request for Information delivered to McNeal & Associates Consultants Ltd (attention Regan McNeal) by mail, fax or electronically by July 16, 2001.